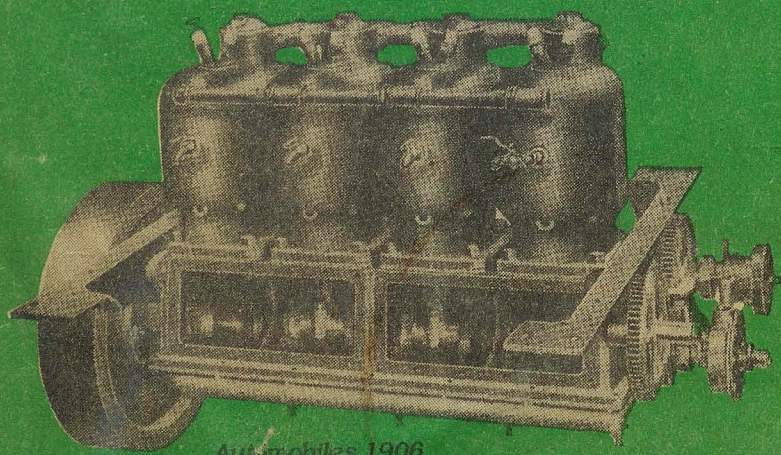
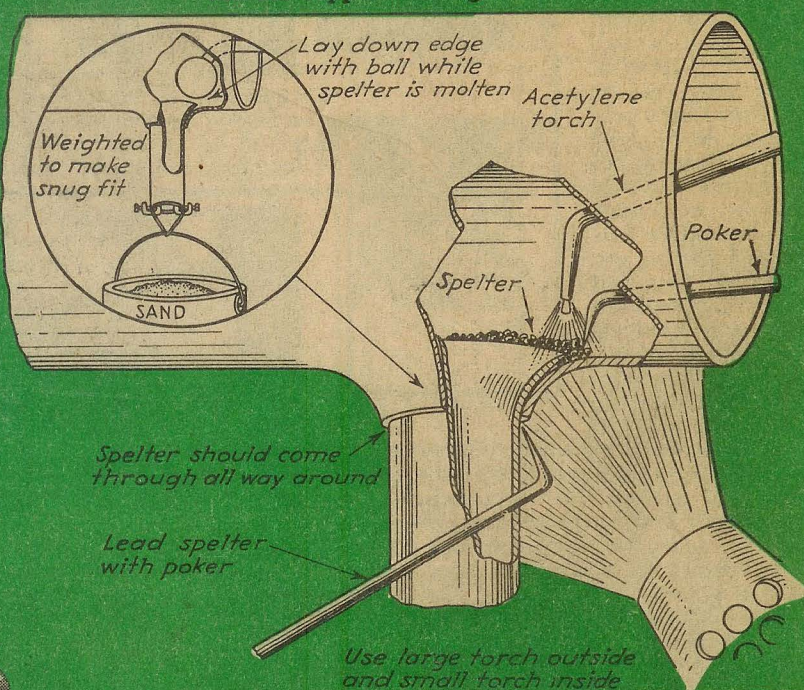
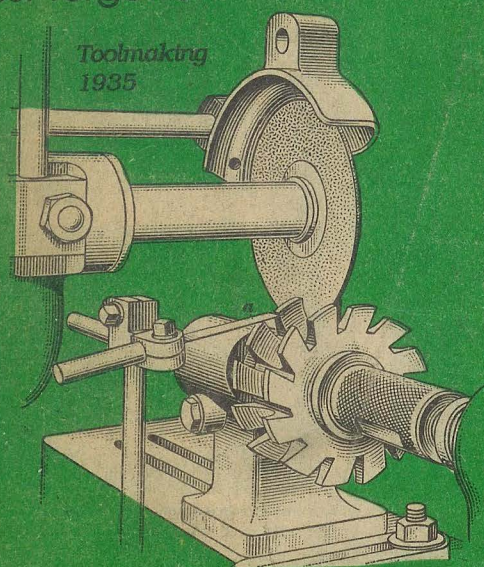


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1896 American Machinist .....	39
Steam Engine Projects .....	53

# Lindsay Publications Inc

PO Box 12, Bradley IL 60915-0012 815/468-3668



# US Navy Foundry Manual

Yes, in 1958 the Government did do something right!

## FOUNDRY MANUAL

by the  
United States Navy  
reprinted by  
Lindsay Publications

Looking for a great foundry hand-book? I hate to admit the government ever did anything right, but this 1958 NAVSHIPS publication is a gem. It's loaded with practical, wall-to-wall foundry how-to. Since most of the swabbies I knew were talented at drinking and not reading, it's no wonder that this manual is loaded with some of the best foundry photos and drawings I've ever seen. You can learn by merely studying the illustrations.

The preface accurately describes the Manual—

"This Manual is intended primarily for use by foundry personnel aboard repair ships and tenders. The recommended practices are based on procedures proved workable under Navy conditions and are supplemented by information from industrial sources.

"The Manual is divided into two general sections. The first section, chapters 1 through 13, contains information of a general nature, such as 'How Metals Solidify,' 'Designing a Casting,' 'Sands for Mold and Cores,' 'Gates, Risers, and Chills,' and 'Description and Operation of Melting Furnaces.' Subjects covered in these chapters are generally applicable to all of the metals that may be cast aboard ship.

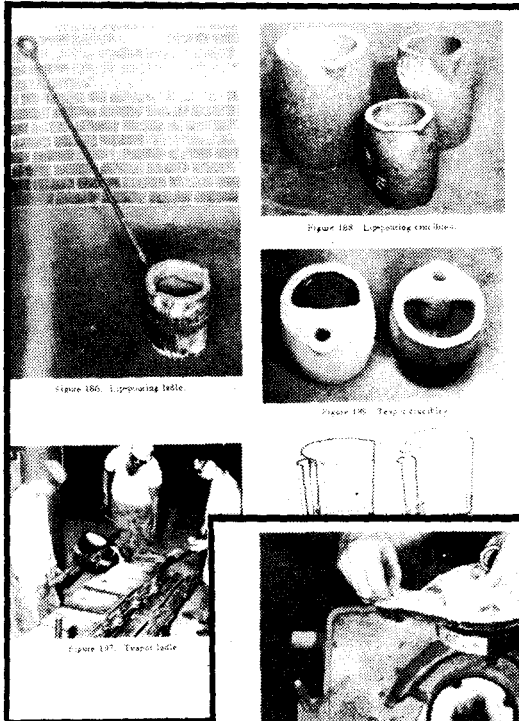


Figure 165. Lifting ladle

Figure 166. Lifting ladle

Figure 167. Tilt ladle

Figure 168. Tilt ladle

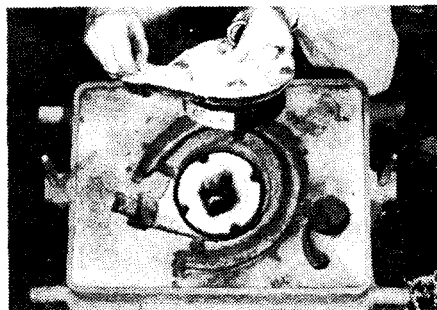


Figure 169. Ladle pouring

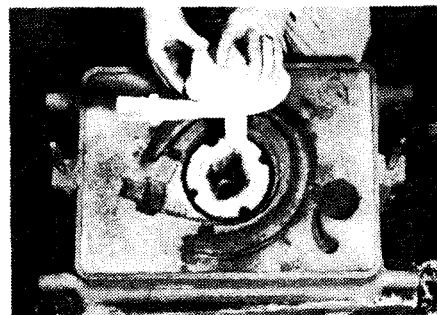


Figure 170. Ladle pouring

do-it' idea as the principal aim. Discussions as to the 'why' of certain procedures have been kept to a minimum. This manual contains information that should result in the production of consistently better castings by repair ship personnel."

Although it pays to know why procedures are performed the way they are, the first step is to perform them. Consider this to be pure practical how-to. It delivers. Excellent book. No two ways about it. If you pour metal, you need this book. From this you can probably learn to pour aluminum toilet seats that you can sell to the Pentagon for \$700 each!

Get a copy of this. You won't be disappointed. A gem! 8 1/2 x 11 paperback over 300 pages  
Cat. no. 20072

\$19.95

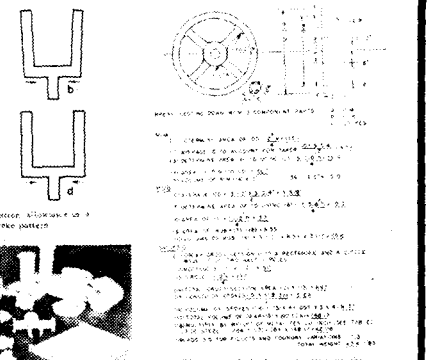
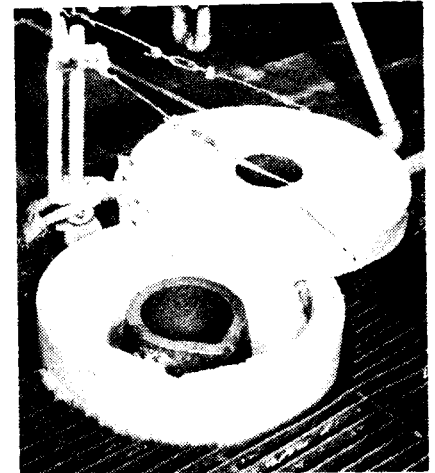
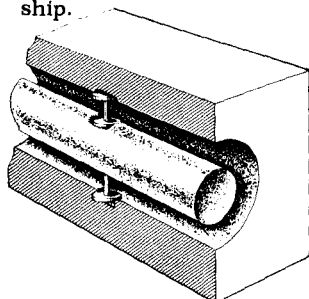


Figure 172. Ladle pouring



tions for sand mixes, molding practices, gating, and risering are covered in these chapters.

This manual has been written with the 'how-to-

"The second section, chapters 14 through 21, contains information on specific types of alloys, such as 'Copper-Base Alloys,' 'Aluminum-Base Alloys,' 'Cast Iron,' and 'Steel.' Specific melting practices, sugges-

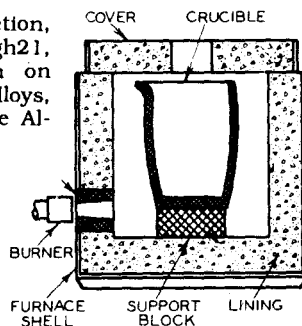


Figure 174. Ladle pouring



Figure 175. Ladle pouring

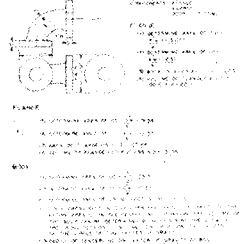
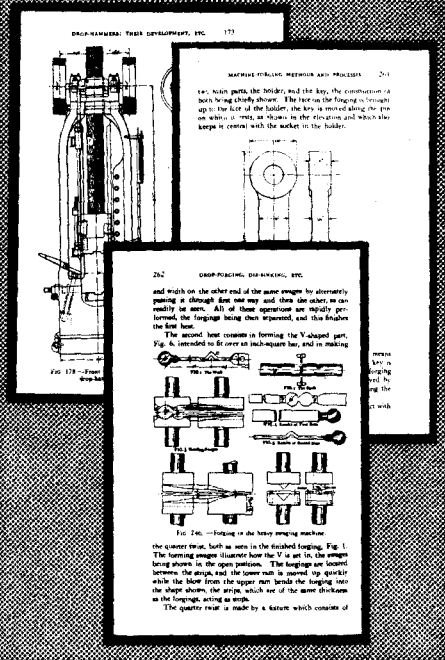


Figure 176. Ladle pouring

# DROP FORGING!



## DROP FORGING

by Joseph V. Woodworth

The full original title was "Drop Forging, Die Sinking and Machine Forming of Steel" originally published in 1911. You'll learn how presses and dies are used to work solid billets of metal, but not sheet metal.

Chapters include: modern practice and design for producing duplicate parts, die-sinking and embossing methods, construction and use of dies, drop-forging and hardening plants, drop-hammers, twisting and reducing of steel and iron, press and hammer forging of hot and cold bar and sheet stock, forging machines, steam-hammer, bulldozer, swaging machines, hydraulic forging methods and more.

You'll be shown how to make the dies, harden and temper them, mount them in the press or hammer and use them. It won't tell you how to build a press, but it will show you how they were built in enough detail that you might be able to build your own. You'll see how open end wrenches are made, spoked wheels, and a variety of other parts are formed.

Sure, this is an old book, but steel is still being forged. The principles haven't changed. You rarely see books on hammer forging of steel, and it's even more unusual to find one of this quality. Good book. Order a copy. 5 1/2 x 8 1/2 paperback 350 pages Cat. no. 4414 \$13.95

# Secrets of Making Taps, Dies, Reamers, and other Tools!

## TOOLMAKING 1935

by International Textbook Company  
reprinted by Lindsay Publications

The International Textbook Company published for many decades their small texts starting from before the turn of the century. You'll find reprints of many of them in this catalog. Here's another you can add to the list.

You'll learn about general toolroom work, equipment and processes, materials, the equipment of toolmaking, the processes, measurements, the limitations, examples and operations, cutting tools, tap fluting, hand taps, machine taps, taper taps, hobs, tap holders, square threaded taps, straight reamers, taper reamers, tool cutting, counterbores, hollow mills, milling cutters, solid and inserted tooth cutters, formed cutters, worm-gear hobs, end and slab mills, milling cutter grinding, box tools, broaching, and more.

We have reprinted an earlier edition of this same book. And, yes, some of the material here is the same. But! Part of it has changed.

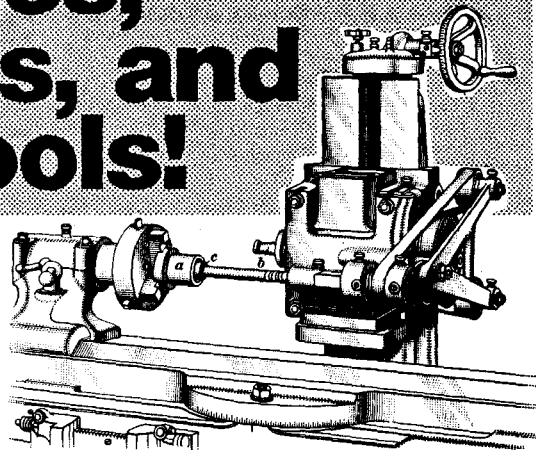
**NEW!**  
Available on  
or about  
Nov 27, 1989.  
Orders taken  
in advance.

And the illustrations have been updated to reflect the "new" technology of 1935. You'll find that this is a great book for beginning "tool and die" craftsmen.

Learn about precautions with a jig borer, gearing of relieving attachments, effect of hardening a tap, profiling with a vertical shaper, and much more.

If you want to make and sharpen cutting tools for your own shop rather than buy them, you should have a copy of this short and sweet, but quality book in your reference library. Yes, you can find better books that specialize in one particular type of tool, but you'll be hard pressed to find a general introductory text that covers so much for so little a price.

And excellent book. One you should have. Get a copy! 5 1/2 x 8 1/2 paperback 184 pages Cat. no. 20269 \$9.95



## TOOLMAKING, PART I

requires one-third the number of revolutions of the work as the number of teeth in the gear.

**Rule:** The ratio of the change gear to the work gear is equal to the ratio of the number of teeth in the work gear to the number of teeth in the change gear.

**Example:** Calculate a set of change gears to cut a gear of 24 teeth on a lathe using a 36-tooth gear as a driver.

**Solution:** The following tool must be used to cut the gear: 24 and the 36.

Therefore, by the rule, the ratio of the change gear to the work gear is 24 to 36, or 2 to 3. This means that the gear 2 on the lathe must be used with the gear 3 on the work.

**Example:** Calculate a set of change gears to cut a gear of 24 teeth on a lathe using a 36-tooth gear as a driver.

**Solution:** The following tool must be used to cut the gear: 24 and the 36.

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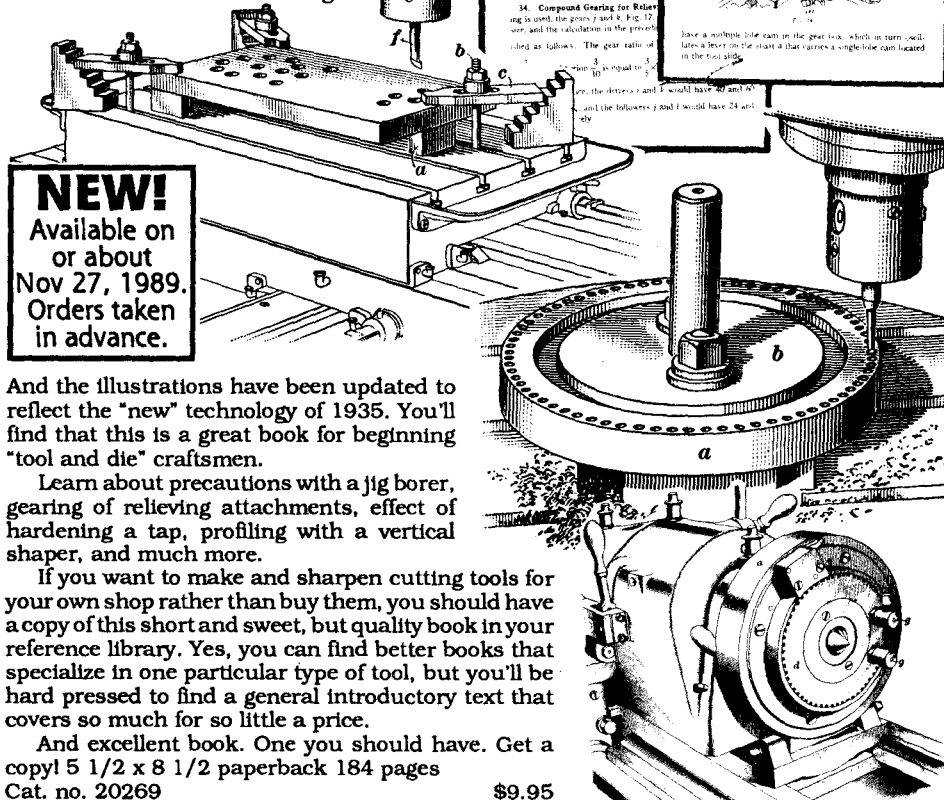
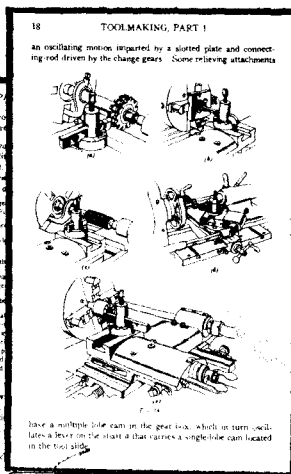
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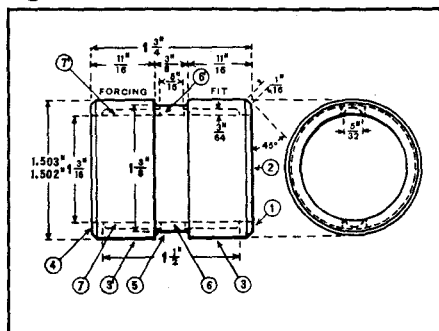
**Solution:** The following tool must be used to cut the gear: 24 and the 36.



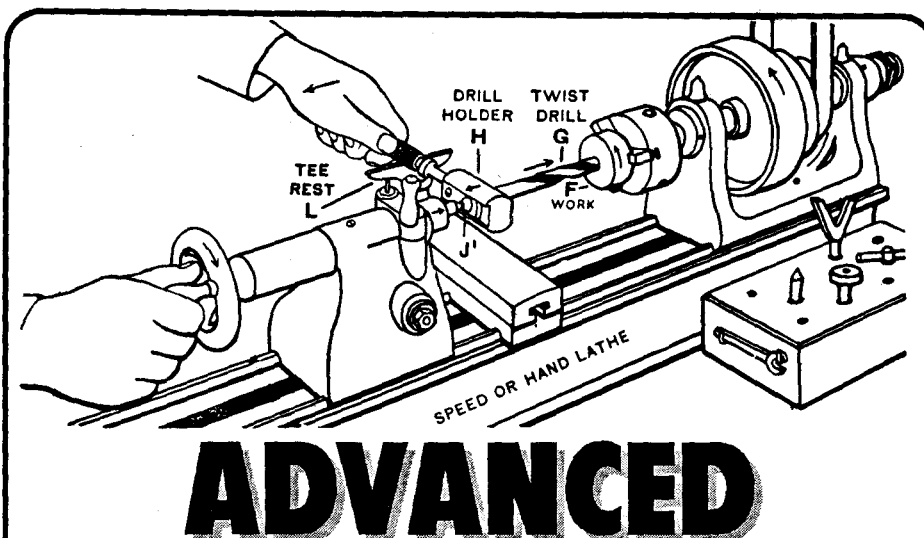
by Robert H. Smith  
reprinted by  
Lindsay Publications

Smith taught at MIT and first brought out this book in 1915. This particular edition was last updated in 1925. That makes it new enough to still be of great value, but old enough to have a great many techniques that are no longer taught.

I'm amazed at the easy-to-read type, the step-by-step instructions, and the great illustrations. Modern books are prettier, but they cannot possibly do a better job of teaching.



Chapter six starts with drilling jigs, boring bars, eccentric turning. Then you'll learn about facing large cylinders, demagnetizing work, use of steadies and followers, external and internal grinding, grinding piston rings, milling cutters, reamers, and more. Chapter nine deals with planers and will show you the tools and cutters, ways of holding

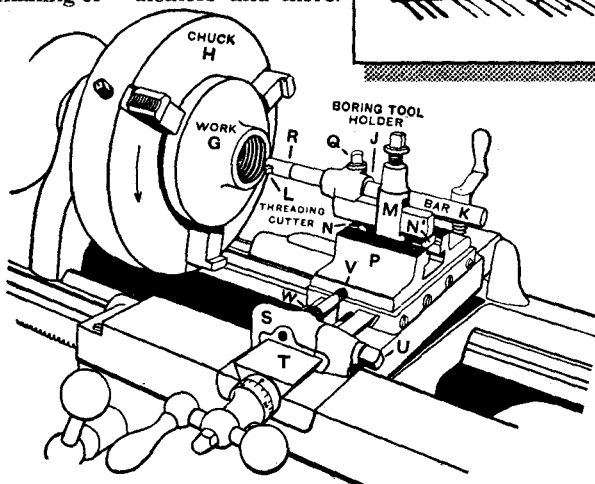
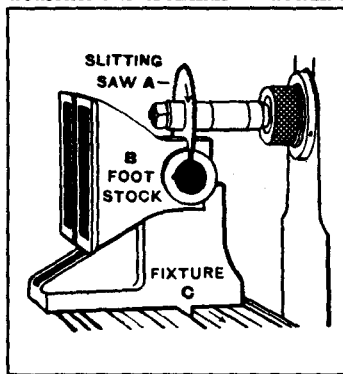


# ADVANCED MACHINE WORK!

Chapter ten hits you with milling machines (horizontal mostly) and delivers very detailed information in their set-up and use. You'll learn about index and differential index milling. Examples include how to groove taps, flute reamers, mill T-slots in a circular table and more.

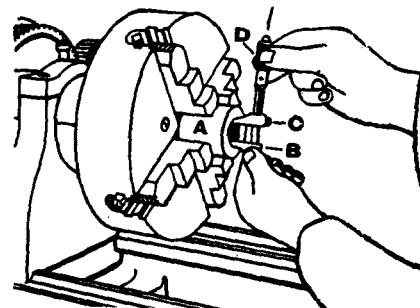
Section eleven is dedicated to gears and gear cutting and is loaded with tables, diagrams, formulas, sample setups, and how-to.

Chapter twelve is dedicated to toolmaking — making mandrels, taps, milling cutters, a hand reamer, plug gage, measuring machine, grooving twist drills, precision methods of locating holes for jig construction, use of a sine bar, testing lathe work with indicators and more.



The last chapter will show you how to inspect and control the quality of manufactured parts with gauges and measuring equipment. You'll learn how to check the accuracy of the lathes, milling machines, drill presses, lead screws, and even the use of optical flats to measure to millionths of an inch!

Within the 800 pages of this hardcover gem is just about everything you can imagine. And what differentiates this from



other machine shop books, old or new, in detail. A lot of the machine shop books are very simply written for high school people who have never seen a lathe. Or you get a college text for people who are not quite beginners, but you don't get enough detail.

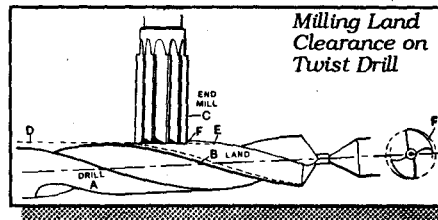
If you've never used a lathe, this book will start you out at zero, but you may want a simpler book. Once you've done some machining and find that first book too simple, then you'll find this is exactly what you need – for learning and for reference.

The price is a little high but his baby delivers! A modern book of

this quality would cost at least twice as much! So it's really a bargain. I recommend it highly. Those who have a copy have been very happy with it. Order yourself a copy today! 6 x 9 hardcover 800 pages heavily illustrated

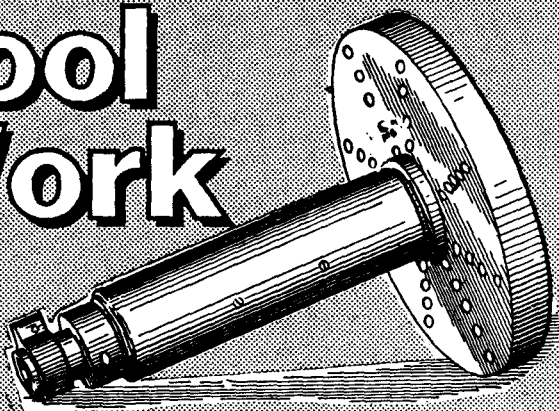
Cat. no. 4236

**\$25.95**





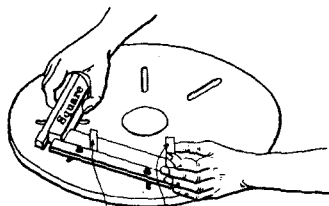
# Accurate Tool Work



## ACCURATE TOOL WORK

by Goodrich & Stanley  
reprinted by  
Lindsay Publications

Even I can drill an almost-accurate hole in a piece of steel or aluminum with a drill press or even a hand drill. But if you told me that the hole had to be accurately located to within a few thousandths of an inch, I'd



have to dig out this book and study it.

Here, you'll learn high accuracy machine shop methods in a series of chapters that were once articles in *American Machinist* magazine. The chapters include locating and boring holes in drill jigs, boring oblique holes in jigs, economical jig work on the milling machine, boring holes on the miller and checking with verniers, a precision drilling and reaming machine, master plates and how they are made, master plates in die making, master plates in making watch tools, trigonometry in the tool room, a tool for laying out angles, and measuring dovetail slides, gibs and V's.

Other chapters cover a gage for producing accurate tapers, the microscope in the tool room, the microscope in the manufacturing plant, making a set of accurate index dials, inspecting tools with the test indicator, a universal indicator and some of

its applications, and two chapters on Swedish gages and their use.

Although first published in 1907 and 1908, these articles and the methods they reveal are still useful today. Even if they weren't, the chapters on making custom, precision master plates for an indexing head, and the precision indicator capable of indicating to thousandths of an inch are worth the price of the book.

I can't honestly say you'll be able to use everything in this

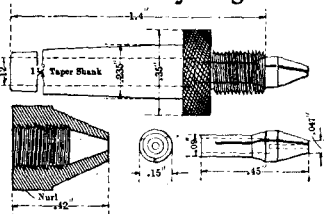


FIG. 101 — SMALL DRILL CHUCK

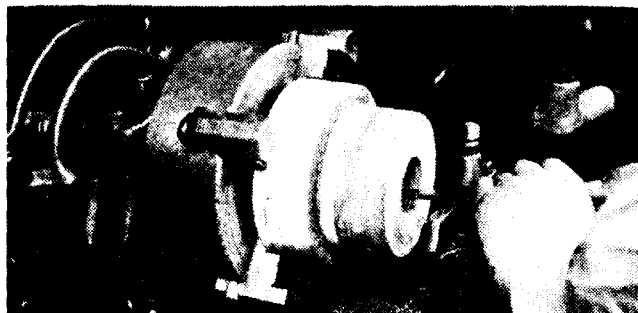
book. But you will see how precision drilling techniques were devised for the production of early adding machines, type-

writers and watches. With this book you can look over the shoulder of a precision tool maker, and at the very least, get ideas and inspiration that should improve your machine shop abilities.

Get a copy of this book. It's excellent. It's loaded with drawings and photographs. Great ideas! Excellent lessons! And plenty of inspiration! Order a copy. 5 1/2 x 8 1/2 paperback 217 pages

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# Learn the secrets of Metal Spinning



## METAL SPINNING for Craftsmen, Instructors, and Students

by Reagan & Smith

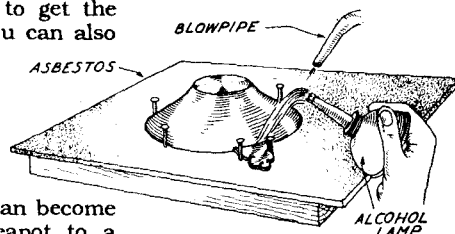
You can chuck a solid block of metal into a lathe and cut enough of it away to get the shape you need. You can also chuck a piece of sheet metal in the same lathe and using slightly different tools spin it into a smoothly contoured shape that can become anything from a teapot to a missile nose cone.

In this quality book you'll learn historical facts about metal spinning, why people are interested in spinning, the necessary mechanical set-ups, spinning tools, chucks for spinning, the treatment of different metals, lubricants to be used, the actual process of spinning, and educational as well as useful projects.

There are plenty of shop courses around that will teach

you how to turn a bronze bushing. But have you seen any instruction offered on turning a sheet of copper into a beautiful vase or candlestick?

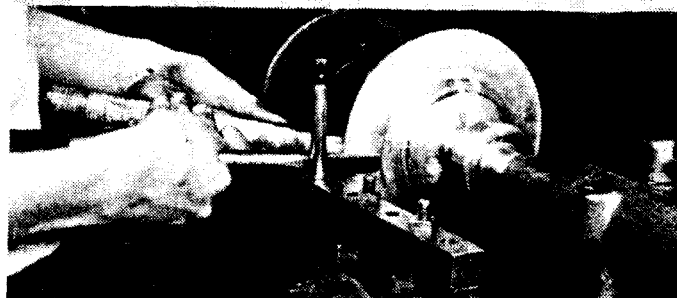
You'll enjoy this 1936 techni-



cal school textbook. It's simply written, loaded with valuable illustrations, and gets right to task of teaching you spinning. Master this skill. It's not all that hard, but very few people, including expert metal workers, know how to spin. You can learn how with this book and some elbow grease. Excellent book on a rarely taught skill. Order a copy! 5 1/2 x 8 1/2 paperback 80 pages

Cat. no. 4830

\$8.95





# Ford Trade School's SHOP THEORY

## 1942 Edition



### SHOP THEORY

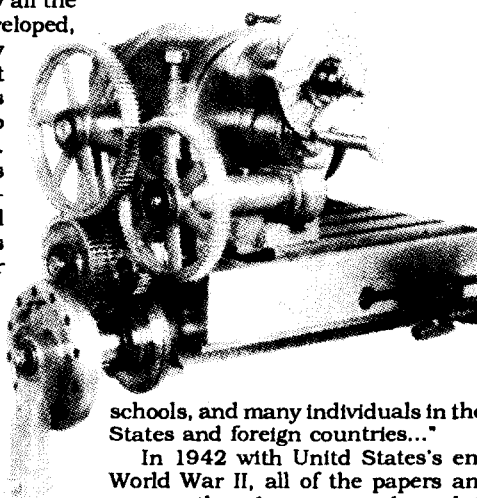
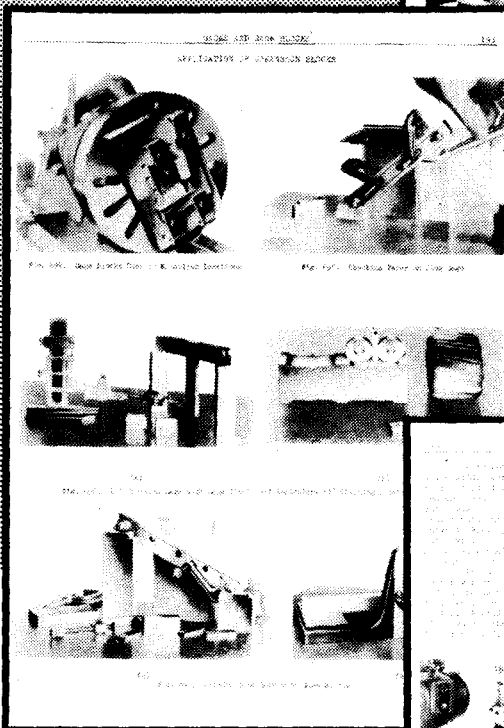
by Henry Ford Trade School  
reprinted by Lindsay Publications Inc

"Eliminating all non-essentials, this book gives you a quick working knowledge of the basic tools, machines, and instruments, and the fundamental operations of machine shop work. It tells you how all the machines and tools used were developed, how they are constructed, and how to operate them. It explains heat treatment and gearing. It includes the mathematics needed for shop work, and stresses safety rules. Every step of machine shop work is pictured clearly both in text and illustration. An industry-developed shop course which already has helped prepare thousands of men for payroll jobs."

From the preface:

"From the beginning *Shop Theory* has played an important part in the educational program of Henry Ford Trade School. Because there was little material in print suited to our use, mimeographed sheets were prepared by our instructors. These were distributed in class and in time the student accumulated much information on many subjects."

"Requests for these sheets were received from other schools and individuals in such numbers that we finally bound them in paper covers and sold them to those interested. More than 150,000 copies of previous editions have been furnished to high schools, colleges, industrial and vocations school, United States Army and Navy



schools, and many individuals in the United States and foreign countries..."

In 1942 with United States's entry into World War II, all of the papers and notes were gathered, rearranged, updated and published in book form by McGraw-Hill. What had been a private textbook for the Ford Industrial School became a standard machine shop text that helped win a war.

This is the entire '42 edition typewritten, loaded with drawings and photographs. Chapters include decimal equivalents, formulas, small tools, rules, micrometers, vernier gages, chisels and chipping, hack saws and sawing, files and filing, soldering, shop review, drills and drilling, tapers,

threads, gearing, cutting tools, shaper, planer, lathes, turret lathes, milling machine, gages and gage blocks, heat treatment, abrasives and grinding wheels, grinding machines, and routing of bench tool work.

This is a gem. There are many, many machine shop books on the market. This edition was abandoned by Ford, probably being replaced by more modern editions. But it is still one of the best books of its type around.

Need a good basic machine shop book? Then get this one. You'll like it. 8 1/2 x 11 paperback 267 pages  
Cat. no. 20064

\$14.95

Lindsay Publications Inc, PO Box 12, Bradley IL 60915

815/468-3668



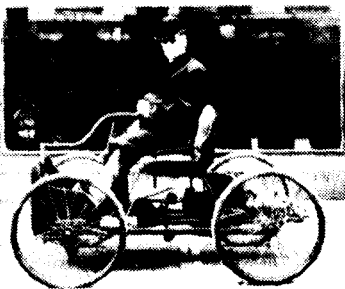
# Henry Ford Biography

**Henry Ford - A Biography**  
**THE WAYWARD CAPITALIST**  
 by Carol Gelderman

Henry Ford was strange dude to say the least. How one man could be so brilliant in some ways and so stupid in others is a complete mystery to me. The same could be said about all of us, but in Ford it seemed to be exaggerated. And it is this very trait that makes Henry Ford such an interesting character.

From the back cover:

"Henry Ford probably did more than any other individual to shape the landscape, character and lifestyle of twentieth-century America. This outstanding biography, the most complete account of Ford's life to be written in over twenty years, is based on extensive original research. An unschooled Michigan farm boy, Henry Ford became, through his drive and practical genius, an industrial titan and one of the world's rich-



est men. His career was founded on a deep-seated populist idealism: Ford shocked the industrial world with innovations such as the \$5-a-day wage, double the prevailing rate when he introduced it in 1914, and he routinely passed his company's profits on to consumers in the form of price reductions on his automobiles. But the urbanized, industrialized world his inventions did so much to

bring about dismayed him, and a reactionary bitterness clouded his later years. Fascinating and paradoxical, Henry Ford's life is a classically American story."

A excellent book that reads quickly and easily. You'll find a center section of photographs. Good reading. Get a copy. 5 1/2 x 8 1/2 paperback 463 pages Cat. no. 1294 \$13.95

## A SHORT HISTORY OF CHEMISTRY

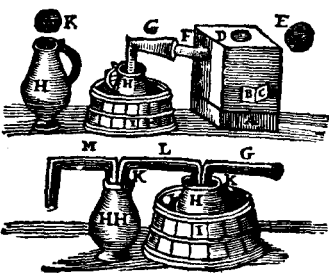
by J R Partington

Chemistry is a fascinating, but often scary science. I often wondered if early chemists didn't unknowingly poison themselves. How on earth did they know what they were doing? How did they make their discoveries with such simple equipment?

Here's a book that was first published in 1937 that is surprisingly easy to read and well illustrated. From the back cover:

"Praised for its balance coverage of both physical and organic chemistry, Prof. Partington's well-known text explores a variety of topics. The first four chapters examine the origins of chemistry and applied chemistry, of alchemy and early medical chemistry. Subsequent sections consider early studies on combustion and the nature of the atmosphere, the discovery of gases (including Priestley's experiments on air and his discovery of oxygen), Lavoisier and the foundation of modern chemistry, laws of combining proportions and atomic theory; Davy, Berzelius and electrochemical theory; the beginnings and de-

## History of Chemistry



velopment of organic chemistry, the theory of valency, history of physical chemistry, periodic law, and the structure of the atom....

Most of the information in this volume has been drawn from original sources. A selection of references and a short bibliography of about 100 items are given to assist readers seeking further information...."

An excellent book to add to your reference library. This will give you a better perspective on how the science of chemistry developed. Good reading. Consider it carefully. 5 1/2 x 8 1/2 paperback 428 pages Cat. no. 573 \$10.95

# MARINE COPPERSMITHING

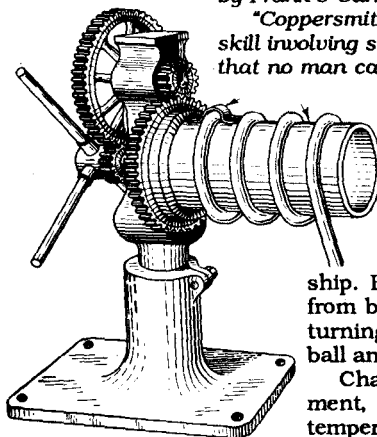
## Marine Coppersmithing

by Frank J Carr

"Coppersmithing is a complicated manual skill involving such a wide range of operations that no man can claim to know all there is to know about every part of it... and the author has made no attempt to show all of them."

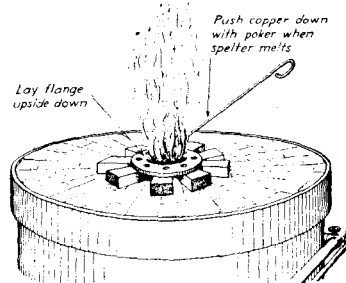
What the author does reveal is fascinating! You'll find that most of the book is devoted to work on large copper piping that runs throughout a ship. But you'll find much more — from brazing and silver soldering to turning a flat sheet of copper into a ball and riveting copper sheeting.

Chapters include tools and equipment, heat, annealing and melting temperatures, acids, tinning and the



use of solders, brazing, flanges, reducing a pipe and making a cup joint, branches, tube bending, templating, expansion joints, sheet brazing, sheet bends, testing, miscellaneous, and more.

Learn about tinning copper, spelter brazing, silver-brazing, joining tubing to flanges, reducing a copper pipe, peening and fitting, sand bending pipe, hammering wrinkles and puckers, working rectangular tubing, making coils, a return bend on a bending press, a cup branch, cup joints, a saddle branch, work templates, expansion joints, making a pipe from two splice sheets, sheet bends, test-



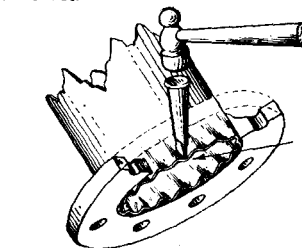
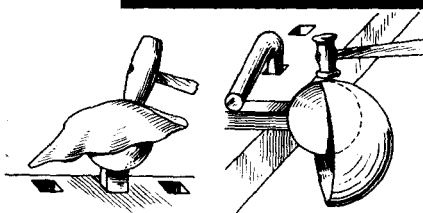
**Learn Great Skills Applicable to Many Other Projects**

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 Orders taken in advance.

ing expansion joints, and much more.

You get practical how-to and wall-to-wall illustrations. Although the core of the book concerns piping, the lessons on working copper are applicable to a wide variety of applications, from decorative copper work (like the Statue of Liberty torch) to making moonshine stills (and moonshine will make you light up like a torch!).

Excellent book with unusual



information at a very reasonable cost. Get a copy. You'll like it. 5 1/2 x 8 1/2 paperback 196 pages

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\$9.95



# HOME MECHANICS

**Great collection of old-time projects! ...from steam power to radio!**

**HOME MECHANICS**  
edited by Archibald Williams

Try your hand at a these World War I vintage projects!

Nineteen chapters with 214 illustrations will show you how to build a workbench, an astronomical telescope, a heliograph for signalling, a model steam turbine, an electrical resistance box, a home-made galvanometer (electrical meter), a Wheatstone bridge (electrical test equipment), a simple electric motor, a model railway electric signal, a pneumatic sprayer, a force pump for liquids, a windmill for pumping, model aeroplanes, a model gyroscopic railway, an X-ray machine powered by a Wimshurst machine, a

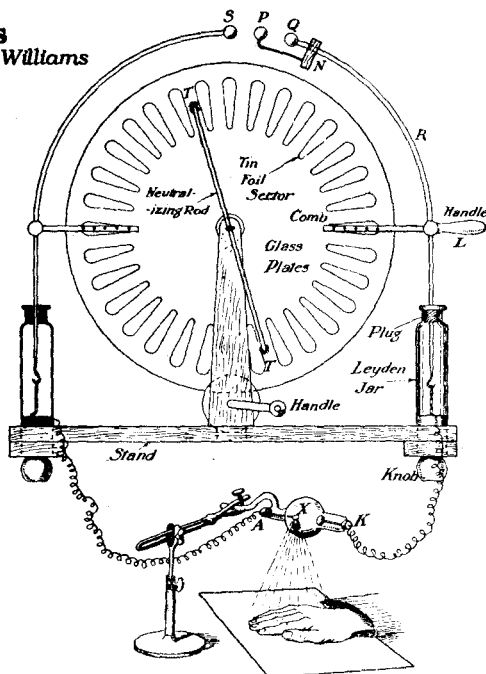
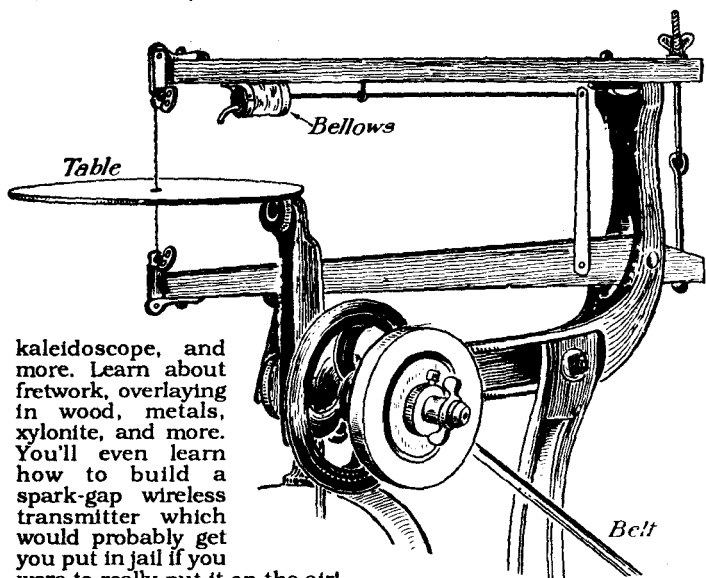


Fig. 46.—Wimshurst Machine (full size) and X-ray tube.



kaleidoscope, and more. Learn about fretwork, overlaying in wood, metals, xylonite, and more. You'll even learn how to build a spark-gap wireless transmitter which would probably get you put in jail if you were to really put it on the air!

You'll find the models are generally not all that complex, yet they really work. Even if you don't build the models exactly as described, you'll at least get great ideas adaptable to other uses.

A great little book of projects. One of the better collections I've seen. I think you'll like it. Order a copy today. 4 1/4 x 6 paperback 297 pages  
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# AUTOPOWER

**Classic 1935 text on automobile generator conversions and modifications!**

**AUTOPOWER — Automobile Generator Conversions and Modifications**

by S. W. Duncan

reprinted by Lindsay Publications

From out of the Great Depression comes this unusual book on ways to make auto generators produce unusual amounts of power. The major problem with this book is that the generators being rewound are no longer available. Even if you were to find one of the units listed it would now be a hard-to-find part for an antique car. If you were to rewind one of these antique generators, I'd personally drive over and "smack you up 'long side the head!"

If that's the case, then why would I reprint something like this? Simple. The principles taught here can be applied to modern generators, DC motors, starter motors and more. You get detailed, practical how-to that can be adapted to modern needs. In other words, this is raw material for your brain. I can't guarantee your success, but I can guarantee that the info you find here is rare, and that you'll get your money's worth.

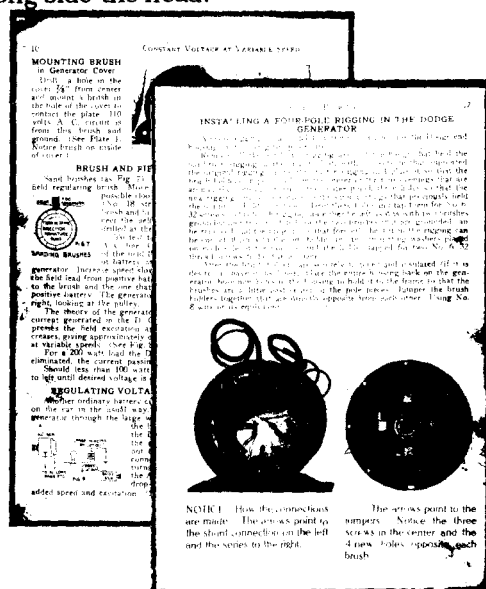
Chapters include changing a Ford Model A generator to a 110 volt alternator, get constant voltage at variable speed, converting a Dodge 12 volt generator into a 110 volt 500 watt alternator, changing a model T to 110 volt AC, making field and armature coils, changing a Delco generator to 110 Volt AC, the winding of automobile armatures, characteristics of DC generators, suggestions on mechanical construction of generators, figuring a new winding for an old frame, converting a farm light plant to 110 volt AC, and a chapter of definitions.

This is a heavily illustrated volume, wall-to-wall how-to.

We reproduced this from a stained, greasy, and obviously used copy of the original 1935 edition. We managed to clean it up to a remarkable degree, but the type is light in some places and some photographs are dirty. Although it's not perfect, it reproduced surprisingly well all things considered.

Get a copy of this. It's great even if it is old. This is one of those manuals that people talk about having seen years ago, but can no longer find. It's worth having a copy just for reference. Order a copy today. 5 1/2 x 8 1/2 paperback 56 pages  
Cat. no. 4791

\$4.95



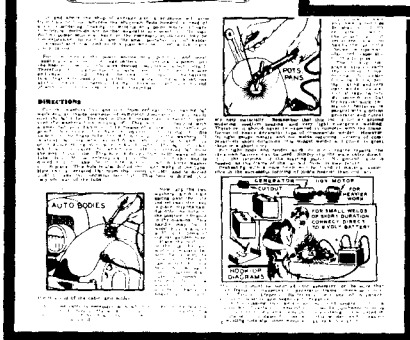
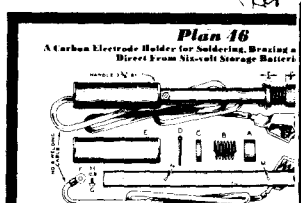
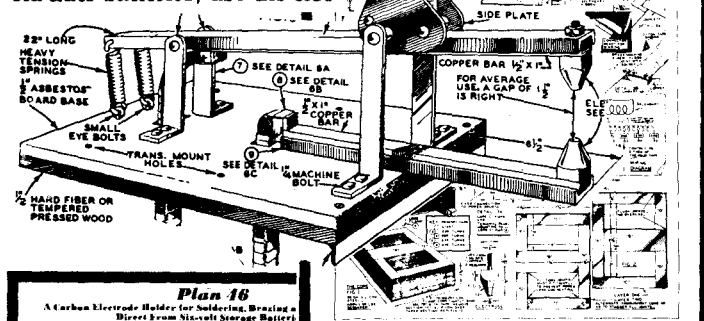


# LeJay Manual

**LeJay Manual - 1945 Edition**  
by Lawrence D. Leach  
reprinted by  
Lindsay Publications

Beginning in the 1930's the LeJay Mfg Co in Minneapolis began publishing a booklet of plans for unusual electrical projects. As new editions came out, new plans were added until by 1945 there were 50 separate "chapters".

As you can see from the contents, most of the articles deal with the conversion with now-antique auto generators into 110 volt alternators, other voltage generators and motors. A lot of this info was used in areas of the country that hadn't been electrified. You could buy old generators from auto junk yards, build a windmill, repair old auto batteries, use the elec-



publication. For instance, you can build a small but useful spot welder powered by nothing more than a string of auto batteries. You get plans for an arc welder, a transformer spot welder, a carbon-arc torch, electric bicycle, a water wheel, windmills and more. And they're all well illustrated.

tricity generated to power homebuilt motors, welders and so on.

Most of the information in this booklet is now of limited value simply because you can't get the generators listed. But rewinding data, hints and tips provided can help you in other rewinding projects for other types of generators.

There ARE several projects in this booklet any one of which is worth the entire price of the

This is a manual worth having in your reference library. You may not be able to use all of the information, but you'll get so many ideas even from those chapters you can't use, that you'll find this manual to be worth many times its retail price.

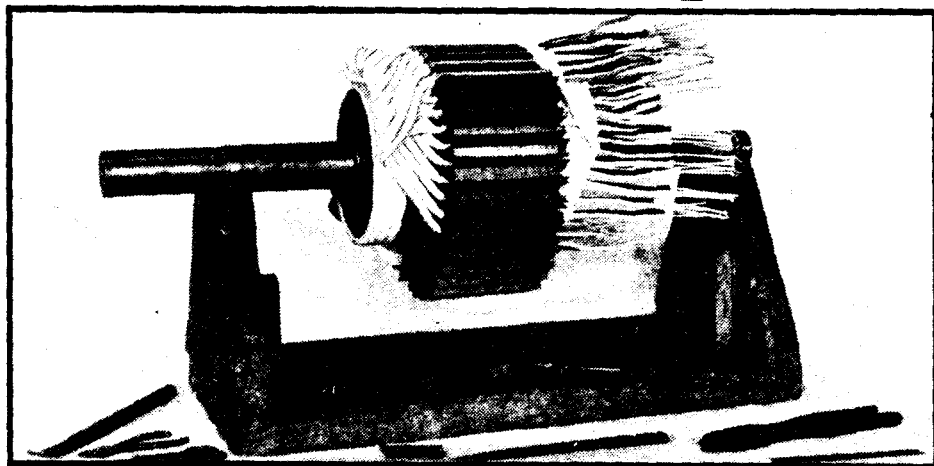
Great ideas. Fun to read. Useful projects. Worth having. Order a copy! 8 1/2 x 11 booklet 32 pages

Cat. no. 20013 \$5.95

## Contents

- 1 Plans for 110 Volt AC Light Plant made from Ford Model "T" Generator
- 2 200 Watt AC Generator for Automobile Made from Ford Model "A" Powerhouse
- 3 A 6 Volt Slow Speed Generator (with plans for all-metal windmill)
- 4 6 Volt & 12 Volt Slow Speed Generators from Dodge "G" or "GA" Northeast Generator also from other Generators
- 5 A 32 volt slow speed wind light Plant Generator
- 6 One 32 Volt Motor, One 110 Volt Motor, One 32 Volt Generator, One 110 Volt Generator from Dodge Generator
- 7 How to Make a Grinder, Series Motor, Constant Speed Motor, A Universal AC or DC Motor and a Soldering Iron
- 8 A 75 to 110 Ampere Arc Welder Made from Dodge "G" or "GA" Generator. Also Dual Welders.
- 9 Pendulum Type Fence Controller made from Ford "T" Coil
- 10 Plans for Building a Complete Wind Light Plant Including Tower, Propeller and Generator Charger
- 11 A 110 Volt AC Light Plant Generator
- 12 A "B" Eliminator For Your Battery Operated Radio
- 13 An Automobile Generator Booster Control
- 14 A 6 Volt Slow Speed Generator from Standard 14 Slot 28 Bar Generator
- 15 A 32 Volt Constant Speed Generator made from Ford "T" Generator
- 16 A 2 Volt Slow Speed Generator from Standard 14 Slot 28 Bar Generator
- 17 How to Convert A 6 Volt Cut-Out for 2 Volt Operation
- 18 Directions for Repairing Your Own Batteries
- 19 A Water Wheel Made from Old Automobile Wheel
- 20 An Electric Outboard Motor from Old Ford "T" Generator
- 21 A Gas Engine or Motor Driven Generator with Drawings in Detail
- 22 An Armature Growler for Testing Auto or Slow Speed Armatures
- 23 Two 32 Volt Series Motors from Dodge "G" or "GA" Generator
- 24 A 32 Volt Heavy Duty Motor made from Dodge "G" or "GA" Generator
- 25 A Bench or Breast Drill for 6, 12, or 32 Volts from "T" Generator
- 26 A 6 Volt Motor for Drill Press, Washing Machines, etc. made from Model "T" Generator
- 27 One 12 volt Motor and One 32 volt Motor Made from Model "T" Generator
- 28 Two 6 Volt Generators from the Dodge, also general information
- 29 A 110 V. or 220 VAC Portable Transformer for Arc Welding
- 30 A 110 Volt Spot Welder — 1 Kw. Input Normal Draw 10 to 11 Amps
- 31 A Direct Drive 32 Volt Wind Plant — All Metal Construction
- 32 A Battery Spot Welder
- 33 Armature Diagrams for Autolite, Bosch-Autolite and Bosch Generators
- 34 Armature Diagrams for Delco, Delco-Remy, & Remy Generators
- 35 Armature Diagrams for Ford A, B and V8 Generators
- 36 Armature Diagrams for Northeast Generators
- 37,38 Armature Diagrams for Atwater-Kent & Dyneto Generators
- 39 Armature Diagrams for Leece-Neville Generators
- 40 Armature Diagrams for Wagner Generators
- 41 Armature Diagrams for Westinghouse Generators
- 42 Plans for Installing Lights on Your Tractor
- 43 Two Types 110 Volt AC Insect Exterminators
- 44 An Electric Scooter Using a 6 or 12 volt Battery for Power
- 45 An Electric "Go Bike" Using a 6 or 12 volt Battery for Power
- 46 A Carbon Electrode Holder for Soldering, Brazing and Light Welding Direct from Six-volt Storage Batteries
- 47 Ball Type Fence Controller Made from Ford "T" Coil
- 48 110 Volt AC 500 Watt Self Excited Generator from Dodge Model "G" or "GA" generator
- 49 110 Volt AC 60 Cycle 1/2 HP Synchronous Motor from Dodge Model "G" or "GA" Generator
- 50 An AC Welding Transformer Using Dodge Generator Coils
- Appendix Windpower Information, Definitions, etc.

# Armature Winding and Motor Repair!



## ARMATURE WINDING AND MOTOR REPAIR

by Daniel H. Braymer

From 1920 comes this motor rewinding book loaded with drawings and photographs that will show you how to build both AC and DC machines.

Chapters include: DC machines, AC machines, shop methods of rewinding DC armatures, making commutator connections, testing DC armature windings, operations before and after winding DC armatures, insulating coils and slots for winding, shop methods for rewinding AC machines, testing induction motor windings for mistakes and faults, adapting DC motors to changed operating conditions, practical ways for reconnecting induction motors, commutator repairs, adjusting brushes and correcting brush troubles, inspection and repair of motor starters and generators, diagnosis of troubles, methods to solve special troubles, tables and more.

One special chapter at the back will show you how to build the special tools and jigs, an armature sling, a pinion puller, coil winding machine, a coil taping machine, commutator slotter, armature banding machine and more.

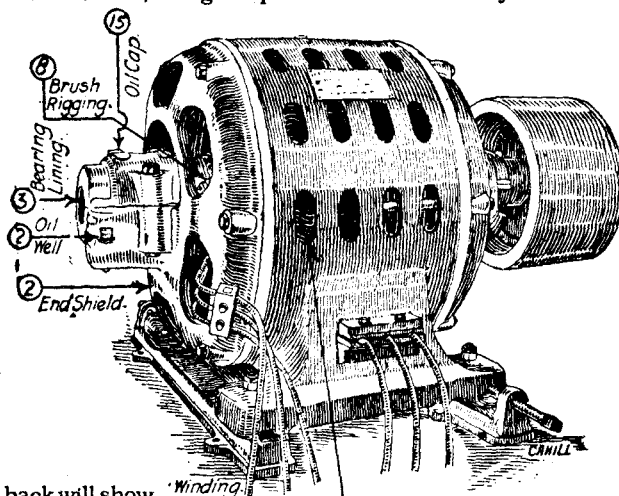
The motors described are large types used in factories. But the principles apply to the smaller motors you and I use. You'll learn how to reconnect induction motors for different voltages and phases, how to operate a DC motor as a generator and visa-versa, change the DC motor windings for different voltages, and more.

You'll be taught all the techniques from removing old windings and cleaning slots, to winding the coils, insulating the end con-

## Classic 1920 Text!

nections, inserting the coils, painting the windings, relining split bearings, and much more. You get data on all types of wave and lap windings, varnishing and insulating materials, and much more.

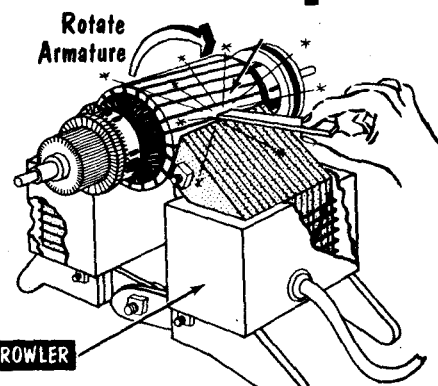
I make you no promises, but this is the logical place to start should you want to



rewind a motor to particular voltage, wind a generator or alternator for use with a windmill or waterwheel, rewinding a big generator for use as a welder, modify a DC motor for use in an electric car, and so on.

This is a beautiful book. You get over 500 pages of clearly written, wall-to-wall practical how-to with excellent illustrations. This is as good as, and in most cases, is much better than, any motor book I've carried in the past, regardless of price. It's a gem that should be in the reference library of most "machine freaks" (that includes you, son). Order one as soon as you can. 5 1/2 x 8 1/2 paperback 540 pages  
Cat. no. 4384 \$16.95

# SMALL MOTORS & Their Repair



GROWLER

## MOTOR TESTING

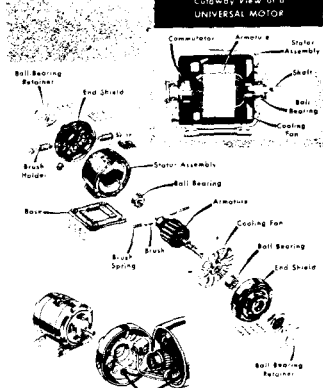
Testing Capacitor Start and Run and Repulsion Motors

Capacitor start induction motors can be checked similarly to split phase and capacitor motors. In addition this motor contains a two-position switch which may also be checked if the motor runs only when hand started. When this is the case check the end play of the shaft. If excessive, it may mean that the contacts of the two position switch are not getting current. To

Set  
Btu  
Cont  
on  
Check  
for  
High

## UNIVERSAL MOTORS

### End View of a UNIVERSAL MOTOR



### Exploded View of a UNIVERSAL MOTOR

## FRACTIONAL HORSEPOWER MOTORS and REPAIR

by Gerald Schweitzer

When one of your shop motors fails, chances are this book can show you how to fix it. Fractional HP is loaded with top-rate illustrations, exploded views, wiring diagrams of the windings, starters, and protection devices found on almost all small motors.

You'll learn about induction motors, split-phase, capacitor, repulsion, shaded-pole, universal, and three-phase motors. Learn about testing, maintenance, control and protective devices. Covers simple repairs, but not rewinding procedures. Get a copy of this valuable reference book for your technical library today! 6 x 9 168 pages.  
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### **THERMIT Welding Process**

by Richard N. Hart

reprinted by Lindsay Publications

Thermit! What an incredible process! Take a mixture of powdered aluminum and iron oxide, ignite it, and stand back! Within seconds the mixture flames to twice the temperature of molten steel, and from the bottom of the special crucible comes molten iron.

# Secrets of **THERMIT WELDING**

This booklet is a reprint of a chapter from a 1914 book on welding, back when you made your own acetylene if you did gas welding, and dreamed of the day when you could try your hand at electric arc welding. Thermit was a cheap and simple process used to weld railroad track, enormous axles, even repair broken motor shafts.

Here you'll learn about how the Thermit process was invented and about the details of welding rail including details on the Clark joint, the compromise joint, the special crucible and rail molds. Then you'll launch into special problems for butt welding pipes, broken locomotive

frames, and much more. You get detailed information on the chemistry involved, how to set and preheat pieces, how and why to add nickel or titanium, the use of thermit in foundry practice, examples of practical welds, including photos of repairs on a torpedo boat rudder, a locomotive frame, even a steamboat paddlewheel axle!

This might be a process worth looking into for the home foundry. I have no idea how practical it might be compared to melting castiron in a cupola, for instance, but it certainly is a curiosity. Loads of rare information on an unusual topic. Get a copy. 5 1/2 x 8 1/2 booklet 40 pages

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## Run Three Phase Motors on Single Phase...

### **HOW TO RUN THREE PHASE MOTORS ON SINGLE PHASE POWER**

Yes! You can run three-phase motors on single-phase power using any one of three excellent methods. First, lathes, drill presses, and other machine tool motors can be run with the capacitor method. Second, the autoformer method (a technique you should buy rather than build) is useful for motors running under continuous full load. And finally you can run a whole shop full of three-phase motors from a single, easy-to-build dynamic converter! No rewinding is necessary. These methods are good to at least 150 hp and 220 volts! Low starting currents and excellent power factor are possible.

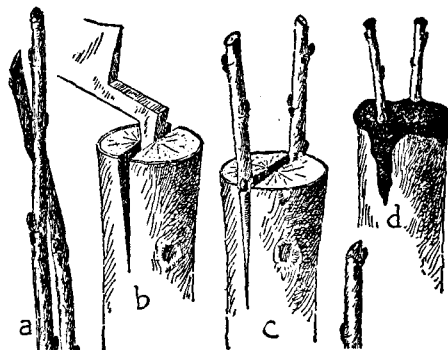
Basic three-phase and induction motor theory is in-

cluded. Complete with drawings, diagrams, and capacitor values. 4 1/2 x 7 booklet 20 pages, 18 illustrations - a BARGAIN!

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## Tell the Boss to Shove It! Homestead!



### **FIVE ACRES AND INDEPENDENCE**

by M. G. Kainb

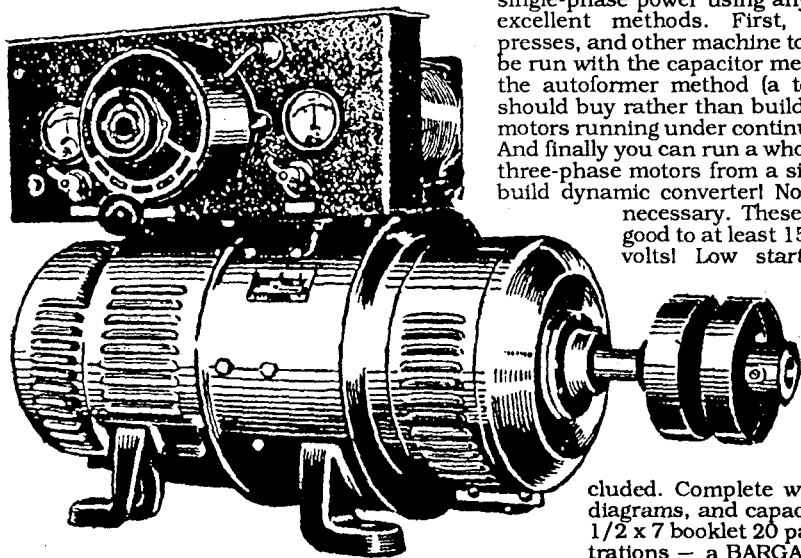
Tell the boss to hang it, and move to the open country and homestead! It's possible. This reprint of the 1935 original will show you as it did thousands during the Depression how to survive comfortably on five acres. You'll learn about greenhouses, coldframes, soil, manure, fertilizers, compost, tools, weeds, orchards, pruning, grafting, seeds, transplanting, berries, things to sell every day, grapes, storage, and much more. There's so much info here at such a low price, you can't afford not to have a copy.

397 pages

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# CREATIVE CASTING!

**Make Jewelry,  
Silverware, &  
Sculpture**



## CREATIVE CASTING by Sharr Choate

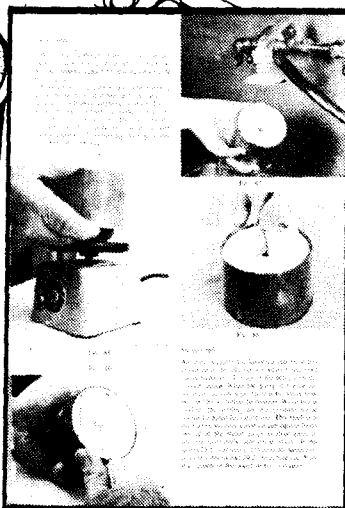
"This classic book on casting jewelry, silverware and sculpture was the first, and still is the best, book to cover in one volume all the major methods of casting metals that are applicable to many crafts, especially to jewelry making. They include techniques for lost wax, replica, hollow core, sand, cuttlefish bone, and rubber-mold methods of casting...."

The first part of the book is devoted to casting itself: creating the design to be cast; the tools and materials and how to use them; working with wax models and with objects to be reproduced; spruing; investing; burning-out; then the final casting.

The second part of the book deals with finishing: basic, then fine finishing; soldering; surface treatment and decoration; gemstone mountings and findings; electroplating; enameling. There are complete tables essential to the casting methods, and extensive bibliography and index...."

Sure, you know how to cast a two ton flywheel in castiron, but can you cast a ring? Or a piece of sculpture?

Most of the foundry books in this catalog deal with making machine parts — metal objects



that are supposed to do a job rather than look good. Here is a book that shows you how to cast metal so that it looks good but has little use.

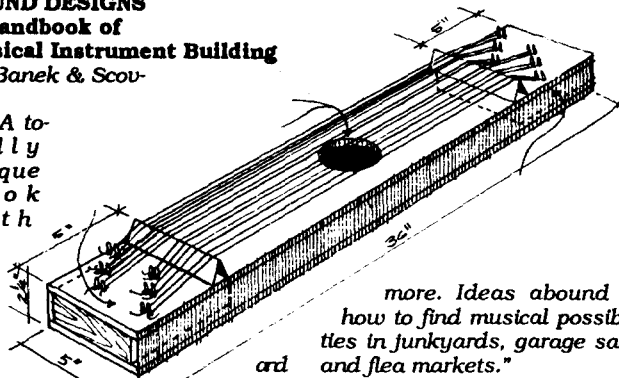
If you want to make models, or just parts for models, pendants, necklaces, pins, rings, candlesticks, silverware and more, then this book will teach you the tricks of the trade. And if you think about it, these skills produce products that are much easier to sell to far more people than a two ton flywheel! In other words, you can make \$\$\$ with this info!

This book has been on the market for a number of years, but this is an 1986 edition. Good book. Great information at a reasonable price. Heavily illustrated. Consider it carefully. 7x10 paperback 213 pages Cat. no. 1287 \$12.95

# Build Unusual MUSICAL INSTRUMENTS!

**SOUND DESIGNS  
A Handbook of  
Musical Instrument Building**  
by Banek & Scoville

"A totally unique book with lots of

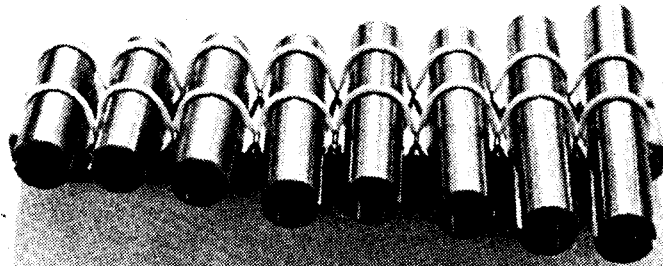


and instructions for making over 50 musical instruments.

Many of the designs in this book are versions of simple folk instruments from around the world — slit drums, thumb pianos, flutes — but also included are some unique instruments invented along the way — oxygen tank gongs, saw blade bells, conduit xylophones — and many

more. Ideas abound on how to find musical possibilities in junkyards, garage sales and flea markets."

Need ideas for new projects? For gifts? Thumb through this book, and you'll find plenty of ideas. Some of the instruments are stupidly simple, but others look like they could be developed into really useful musical instruments. Great book. In print since 1980. An interesting book full of how-to. Get a copy! 5 1/2 x 8 1/2 paperback 209 pages Cat. no. 407 \$8.95



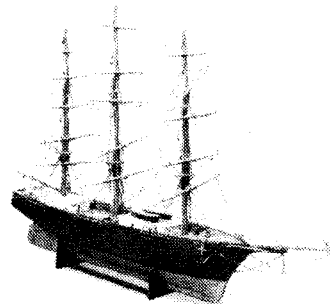
## Build Ship Models

**SHIP MODELS  
and How to Build Them**  
by Charles G Davis

Perhaps the idea of building a model ship sounds a little "off the wall" to you, but if you ever seen a well-executed model, you'll wish you could say you had made it. A beautiful model ship is really something to be proud of.

Learn how to make gorgeous models in this reprint of a 1925 classic. Chapters include types of ships, kinds of models, preparing the block, the deck, the hull, the rudder and transom, the deck furniture, the anchors, the spars, tools for model mak-

ing, glossary and more. You get many drawings, photos of great models, lots of how-to and great hints and tips. And the book is

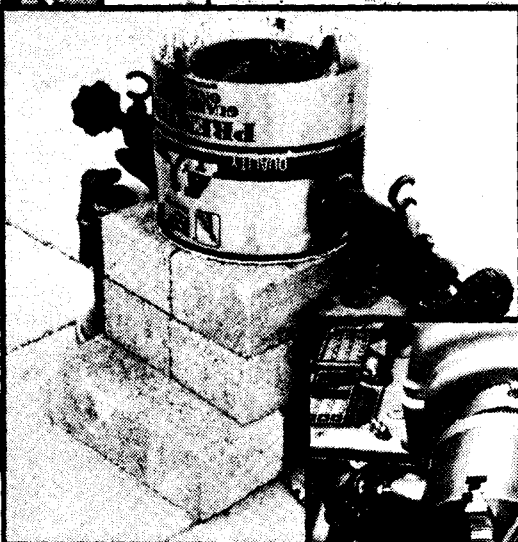
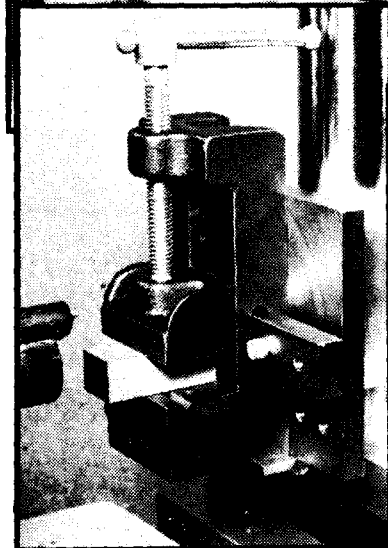
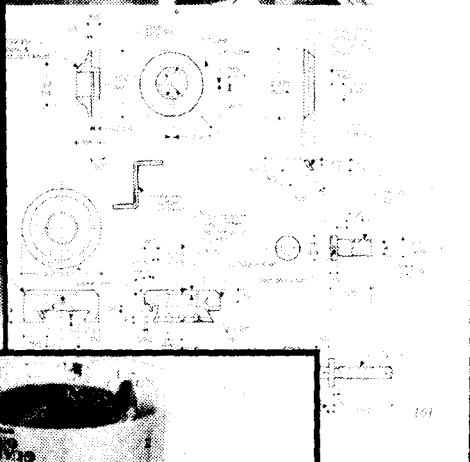
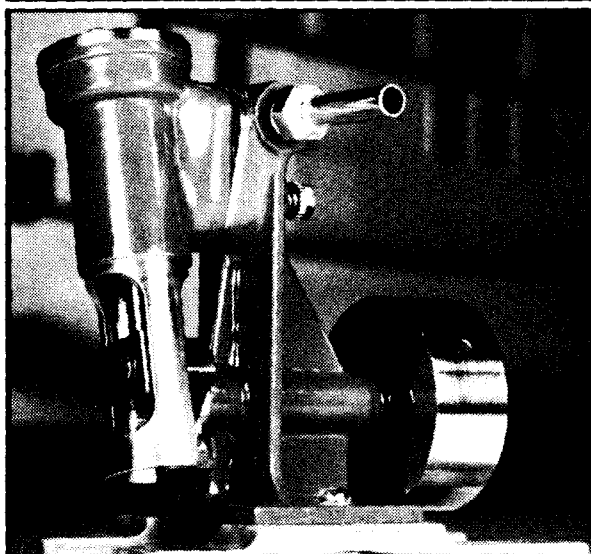


reasonably priced!

This could put you or someone you know into a new hobby. Consider it. It's quite an interesting pastime. Get a copy. 5 1/2 x 8 1/2 paperback 240 pages Cat. no. 479 \$5.95



# Home Shop Machinist PROJECTS



## PROJECTS ONE from Home Shop Machinist Magazine

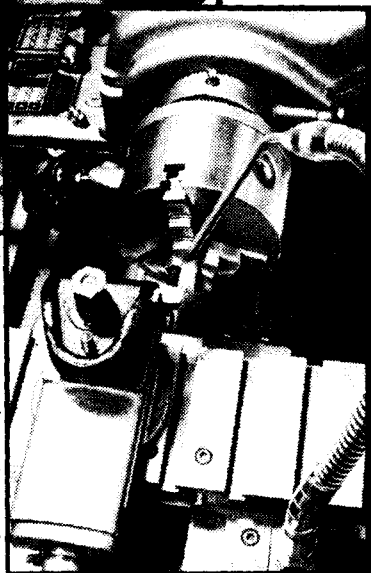
In this beautifully printed book, you get reprints of most of the projects that appeared in *Home Shop Machinist Magazine* in 1982 and 1983, the first two years of its publication.

You'll find fifty-five projects, hints and tips such as building your own dividing attachment, a 20-ton hydraulic press, a Stirling hot air engine, a radius turning attachment, a lathe carriage stop with dial indicator, a precise taper, machining

your own spur gears, milling a drill press, modifications to the Machinex 5 Lathe, a modified 'Wedge' oscillating engine, and much, much more.

Every article is illustrated with drawings and photographs. This is classy stuff. You know what I'm talking about is you subscribe to HSM. A great book of projects. 9x12 hardcover 200 pages

Cat. no. 1276 \$24.95



## The Best Machine Shop Projects from 1982 through 1985

### PROJECTS TWO from Home Shop Machinist Magazine

More great projects from the 1984-85 issues of *Home Shop Machinist*!

You get articles on reconditioning a lathe, pointers on rotary table work, keeping the universal chuck accurate, turning ornamental shapes, building a toolpost grinder, a tail-stock die holder, a large steady rest, and more. Learn how to double the capacity of your lathe. Build your own faceplate, a lathe carriage stop, and milling machine for your lathe and more! Build a rotary milling table, an automatic feed for a milling machine, an end mill sharpening fixture, a home foundry, and more. You get three projects: a firing model Napoleon Field Gun, an electric gun, and a gimbaled ship's lamp.

You get page after page of drawings and photographs. Pure quality. A little bit expensive, but you get your money's worth. Grab a copy! 9x12 hardcover 215 pages  
Cat. no. 1296 \$24.95

If you haven't discovered *Home Shop Machinist* magazine, then write them for information. Tell them you heard about them in Lindsay's catalog. And ask the editor, Joe Rice, if he can still play the "Beer Barrel Polka"....

**Home Shop Machinist  
PO Box 1810  
Traverse City MI 49685**

# Model Engine Construction

## MODEL ENGINE CONSTRUCTION

by J. Alexander  
reprinted by Lindsay Publications

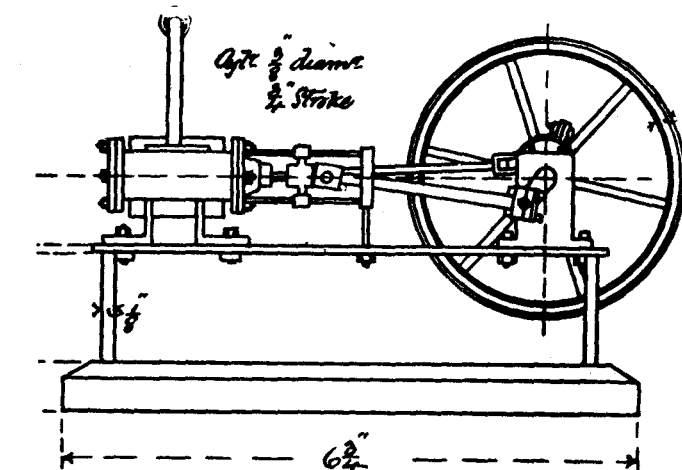
"With practical instructions to artificers and amateurs. Containing numerous illustrations and twenty-one working drawings from original drawings by the author, and re-drawn by C. E. Jones."

If you're looking for projects to build, you'll enjoy this reprint. Originally published simultaneously in London and New York in 1894, this unusual book contains thirteen chapters: tools, boilers and fittings, the steam engine, fitting up the engine, reversing gears, stationary engines, traction and portable engines, locomotive engines and tenders, railway cars, compound marine engines, engine propor-

tions, patterns and castings, and the last chapter covers a hot-air engine, small power engine, and notes.

The illustrations from the 25 large and crumbling foldout plan sheets have been reprinted on pages following the text.

You can build for instance, a beam engine with a 5/8" bore and 7/8" stroke with a 3 1/2" flywheel. The plans for the traction engine locomotive, marine engine, and the rest are of comparable size.



You must realize, of course, that each project could be a whole book rather than a chapter as it is here. The plans are fairly detailed but not quite to the degree you see in modern model magazines. Many of these models are based on small castings which are not commercially available.

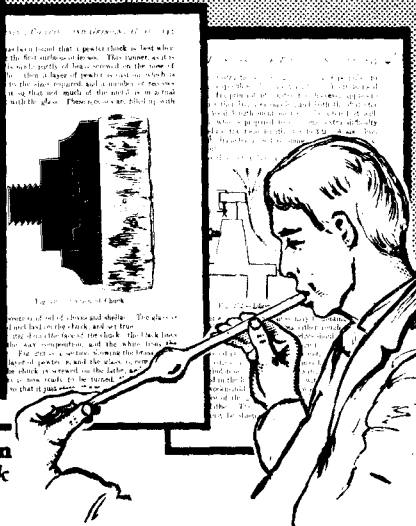
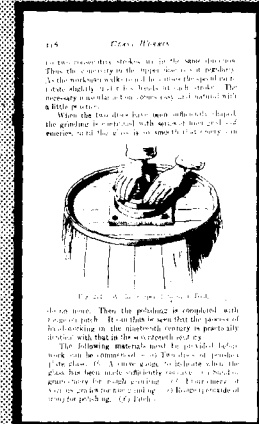
Despite these shortcomings, there is a wealth of information and ideas for the guy with a lathe itching to build a working model, particularly a live steam model. You'll discover things that you rarely see anymore. This book was printed on poor quality paper and is disintegrating. I suspect that if the book is not already rare, it will be soon. We had a devil of a time reproducing the book, but we managed to get a good reprint.

If model engine building is your thing or if you're planning to build an engine someday, get a copy. A bit on the expensive side, but it's a big book and it delivers hard-to-find info. 5 1/2 x 8 1/2 paper-back 360 pages loaded with illustrations

Cat. no. 4449

\$14.95

# GLASS WORKING

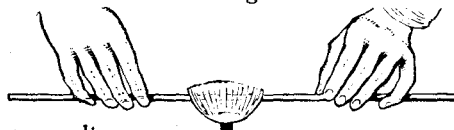


**GLASS WORKING**  
by Heat and by Abrasion  
edited by Paul N. Hasluck  
reprinted by  
Lindsay Publications

You can learn to work glass like an expert by studying this collection of articles reprinted from the pages of "Work" magazine. You'll learn not only how to make laboratory apparatus, but how to grind telescope mirrors and lenses.

Chapters include: appliances used in glass blowing; manipulating glass tubing; blowing bulbs and flasks; joining tubes to bulbs; making thistle funnels; blowing and etching fancy glass articles;

gilding and embossing sheet glass; handworking of telescope specula, turning, chipping and grinding glass; and the manufacture of glass.



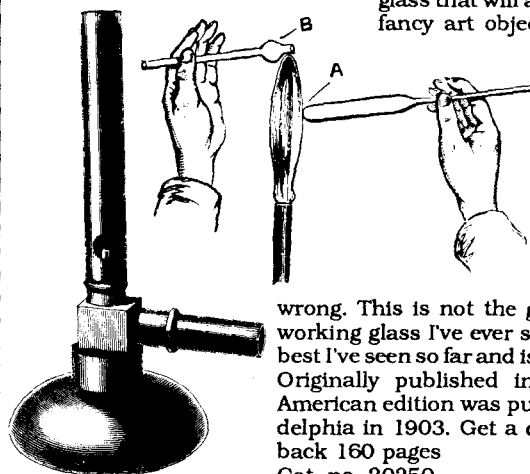
The information on making glass and grinding lenses is too brief, but the working of glass tubing into useful laboratory objects is detailed and well illustrated. You may be able to use this info to get a feel for working glass that will allow you to make fancy art objects, who knows?

You might even be able to apply this to neon signs and maybe even electronic vacuum tubes and x-ray tubes, if you want to be really exotic.

Don't get me wrong. This is not the greatest book on working glass I've ever seen, but it is the best I've seen so far and is well-illustrated. Originally published in England. This American edition was published in Philadelphia in 1903. Get a copy. 4x7 paper-back 160 pages

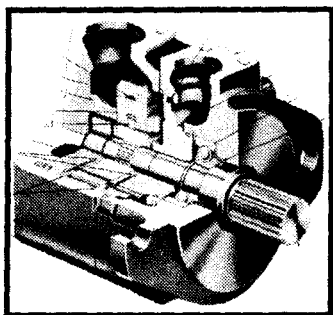
Cat. no. 20250

\$7.95





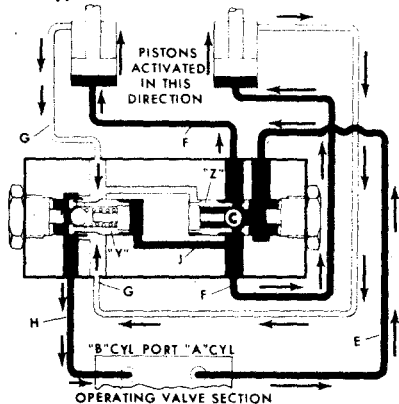
# Learn Hydraulics! from Vickers!



## MOBILE HYDRAULICS MANUAL by Vickers

Although this and the industrial manual cover similar material, this excellent text is angled to mobile hydraulics — those systems found on bulldozers, tractors, and all types of working vehicles. Here the student begins at zero and builds toward a thorough understanding of complex systems.

Learn about reservoirs, coolers, filters, pumps, cylinders, motors. All types of valves are covered: sequence, relief, RC counterbalance, unloading, tilt control, pressure reducing check, flow-control, multiple direction, double-acting spools, and more. You'll find chapters on power steering and hydrostatic drives. There's data on oil types, seals, and just about anything you can imagine.



## Top-rate technical school textbooks...

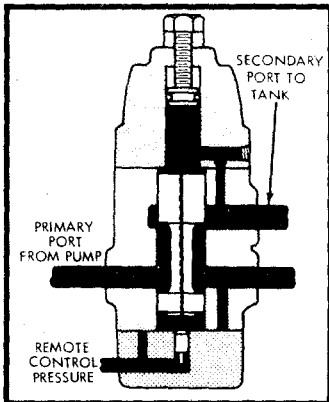
Find out why more than 160,000 copies have been printed since 1967. You don't have to be a pipefitter apprentice to learn hydraulics. Here's your opportunity. Order copies of these manuals today. 6 x 9 paperback 190 pages heavily illus.

Cat. no. 120

\$9.95

## INDUSTRIAL HYDRAULICS MANUAL by Vickers

Within the almost 300 pages of this valuable book you'll find almost anything you can imagine. You'll start from zero and learn the details of industrial hydraulics to the point where you'll understand complex hydraulic systems comprised of pumps, spool valves, regulators, accumulators, throttles, check valves, fixed restrictions, solenoid operated spool valves,



and much, much, more. There are no shortcuts. Everything is here. Learn about jet pipe servos, pilot operated servo valves, deceleration valves, pressure compensated restrictors, and of course, all types of positive and non-positive pumps.

You'll be impressed by the quality illustrations that make learning so much easier. You'll understand in a minute why this

book is found in so many colleges and technical schools.

8 1/2 x 11 290 pages heavily illustrated  
No. 119

\$18.95

## Both Vickers Manuals

Save \$2.95

No. 908

\$26.50

# Josuha Rose's VISE WORK

## VICE WORK

by Josuha Rose  
reprinted by Lindsay Publications

Josuha Rose was one of the outstanding authors of machine shop books in the late 1800's. His first publication was a pair of large volumes now very difficult to find entitled Modern Machine Shop Practice which were loaded with thousands of beautiful wood cut illustrations.

Soon after, he published a smaller reference entitled Complete Practical Machinist that taught machine shop basics to apprentices. Most of the information in the later book is of marginal value since it can still be found in more modern texts.

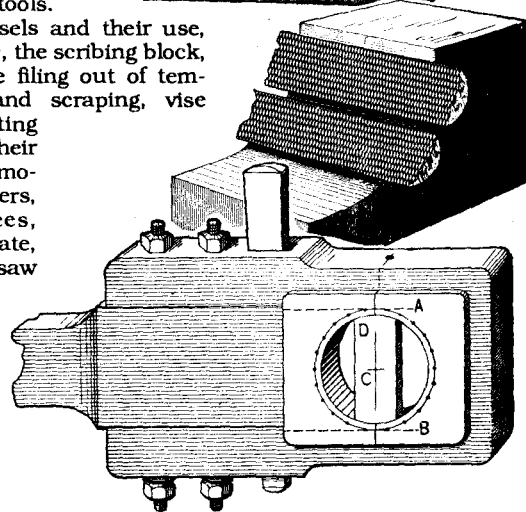
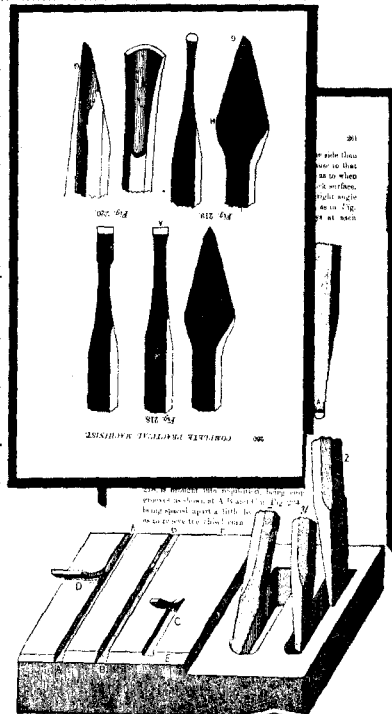
One section that is particularly useful concerns vise work, that is, the art of working a piece of metal clamped in a vise with chisels and files to a degree of precision that most people think is only possible using modern precision machine tools.

Rose covers chisels and their use, calipers, the square, the scribing block, files and filing, the filing out of templates, scrapers and scraping, vise clamps, pening, fitting brass bearings to their boxes, fitting link motions, fitting cylinders, scraping surfaces, making a surface plate, how to cut hard saw blades, how to refit leaky plugs to their cocks, refitting work by shrinking it, how to seal steam and water joints, and fitting connecting rods.

Rose's instructions are well written, and as always, well illustrated. Although these particular chapters were extracted from a 1900 edition, Complete Practical Machinist had already been in print many years. So you know this info goes back to the really "old days".

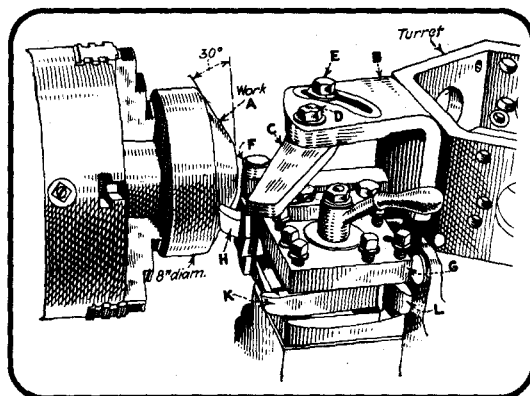
If you're into building machine tools, steam engines, or just want to become an expert in working with basic hand tools just as 19th century mechanics were, you should have a copy of this. It's great instruction from another age at a very reasonable price. Get a copy. 5 1/2 x 8 1/2 paperback back 58 pages  
Cat. no. 20277

\$4.95



# Turning, Boring & Grinding!

*Why machine tool parts  
are designed the way  
they are...*



## TURNING, BORING AND GRINDING

by Dowd and Curtis

reprinted by Lindsay Publications Inc

Some books teach you how to run a machine tool so that you can make another machine. Here's a book that explores the design of the machine tool itself and its parts. And the beauty of this book is that you are told why parts are designed the way they are.

Chapters include consideration of turret and engine lathe tooling, design of chuck jaws, second operation work, design of special fixtures, inside holding methods, turning tools for turret lathes, boring tools, facing tools, recessing tools, reamers and floating holders, cross-slide tools, attachments for turret lathes, layout work, vertical lathes, vertical machines

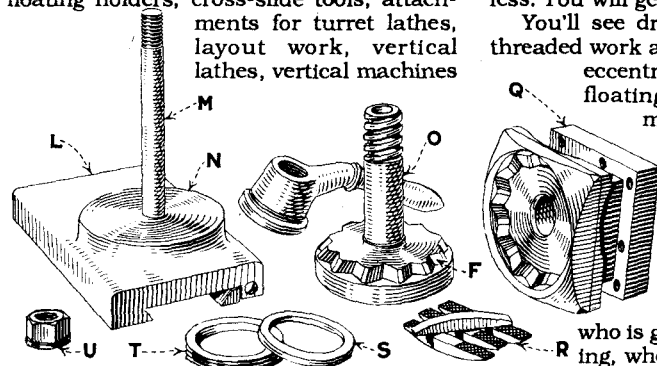


FIG. 144.—Turret toolpost for cross slide.

and boring mills, tapered and curved surfaces and fixtures for grinding.

This one of several volumes in the "Tool Engineering" series was originally published in 1920's for manufacturers. Obviously, speeding mass production was the

purpose of these designs, but equipment is not so extremely specialized as to be useless. You will get many useful ideas.

You'll see drawings of quick-operating threaded work arbors, chucking fixture for eccentric casting, application of a floating scroll chuck, several methods of holding a thin ring pot, progressive design of taper-turning attachment for a turret lathe, two types of floating reamer holders, and much more.

This is advanced information for the guy who is going beyond basic machining, who has an unusual machining problem to solve, or is considering some limited mass production.

Good, solid industrial quality information that you won't find on the newstand (or in the library). Get a copy. Excellent book. You'll find it useful. 5 1/2 x 8 1/2 paperback 340 pages

Cat. no. 20099

\$11.95

## EXPERIMENTAL SCIENCE

by George M. Hopkins

Fantastic! There is no other way to describe this incredibly illustrated two-volume set from 1906. It is certainly worth having.

Starting about 1889 "Scientific American" Magazine published a regular column by George Hopkins showing readers how they could build experimental equipment and test their own versions of new inventions such as the electric light, telephone, and phonograph. Hopkins' columns were routinely reprinted in books, and this 25th edition from 1906 had to be split into two volumes. And what a pair of volumes they are!

You'll find some of the most fantastic wood engravings ever, illustrating experimental equipment of all types.

Volume One consists of nineteen chapters on rest, motion, force, gyroscopes, liquids, gases, sound, heat, light, polarized light, microscopy, photography, magnetism, frictional (static) electricity, dynamic electricity.

Build a gyroscope, Foucault's pendulum, a simple hydraulic press, a hydraulic ram, simple air pump, Geissler tube, a recorder for sound vibrations, device for production of sounding waves, a simple phonograph, centrifugal siren, and Norremberg Doubler. And these are just a few of the projects in only the first half of the first volume!

You can build a simple microscope and accessories, or a simple camera with plate holder, make Daguerreotype photos like those from the 1840's (dangerous), experiment with magnets, static electricity, build all kinds of batteries, a device that converts heat directly into electricity, build bells, electromagnets, and even a 1/4 hp electric motor.

Volume Two will take you into more electricity by investigating AC electricity, arc lamps, high voltage induction coils, and much more. You can build a telephone. Build a magic lantern and perform a variety of interesting projections.

You'll get practical how-to on blowing glass, making lenses, etching glass, making test tube racks and the like, making and using a crucible furnace, sand casting, making carbon rods and plates, and more.

You'll be shown how to perform a variety of scientific parlor tricks. Discover scientific uses for the phonograph, build an opaque projector, and a simple acetylene gas generator. Try experiments with super cold liquid air, or new advances in photography including color photography, divining rods and metal detectors, long distance telephony, new wireless telegraphy, building an electric clock, high voltage experiments, even poly phase electricity!

If you haven't guessed by now, this is both an introduction to physics and simple directions for building strange mechanical equipment.

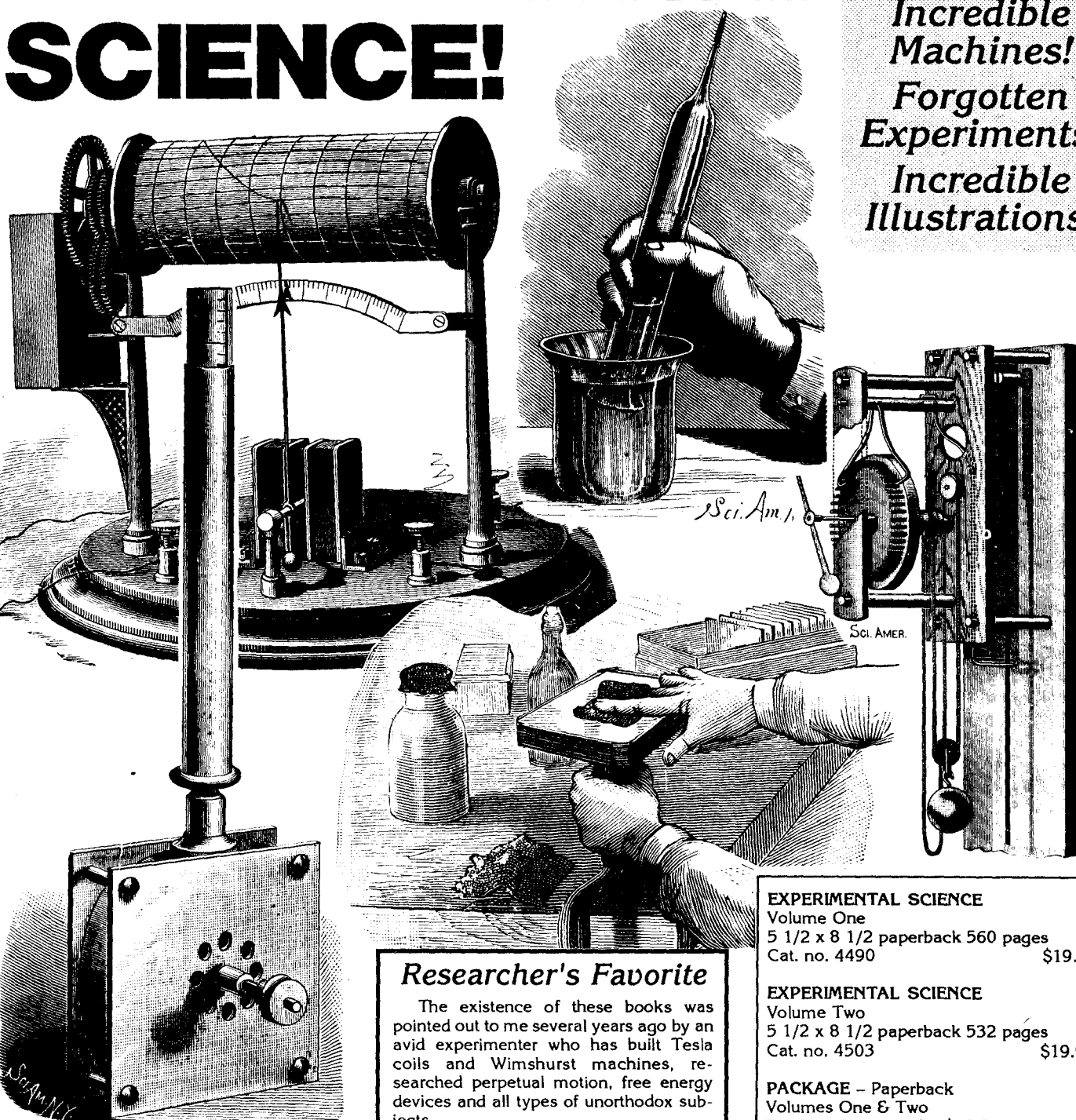
The how-to you get is not overly detailed. You're expected to have some mechanical ability. You *WILL* get excellent illustrations that will show you almost everything you need to know. Any additional secrets are pointed out in the text.

If you want to build and run scientific equipment that hasn't even been seen in decades, you should have this. Kids can build a unique



# EXPERIMENTAL SCIENCE!

Over 1,000  
Pages!  
Incredible  
Machines!  
Forgotten  
Experiments!  
Incredible  
Illustrations!



## Researcher's Favorite

The existence of these books was pointed out to me several years ago by an avid experimenter who has built Tesla coils and Wimshurst machines, researched perpetual motion, free energy devices and all types of unorthodox subjects.

He found *Experimental Science* to be a very valuable reference, but because of its rarity, he hadn't been able to buy a set of his own. When I told him that I was going to take a chance on reprinting the two volume set, he jumped for joy. Now he can afford his own set. So can you.

We're confident you'll find *Experimental Science* as much fun and as useful as we have.

### EXPERIMENTAL SCIENCE

Volume One  
5 1/2 x 8 1/2 paperback 560 pages  
Cat. no. 4490 \$19.95

### EXPERIMENTAL SCIENCE

Volume Two  
5 1/2 x 8 1/2 paperback 532 pages  
Cat. no. 4503 \$19.95

### PACKAGE - Paperback

Volumes One & Two  
Purchased separately: \$39.90  
Cat. no. 926 \$34.95

### SPECIAL HARDCOVER OFFER

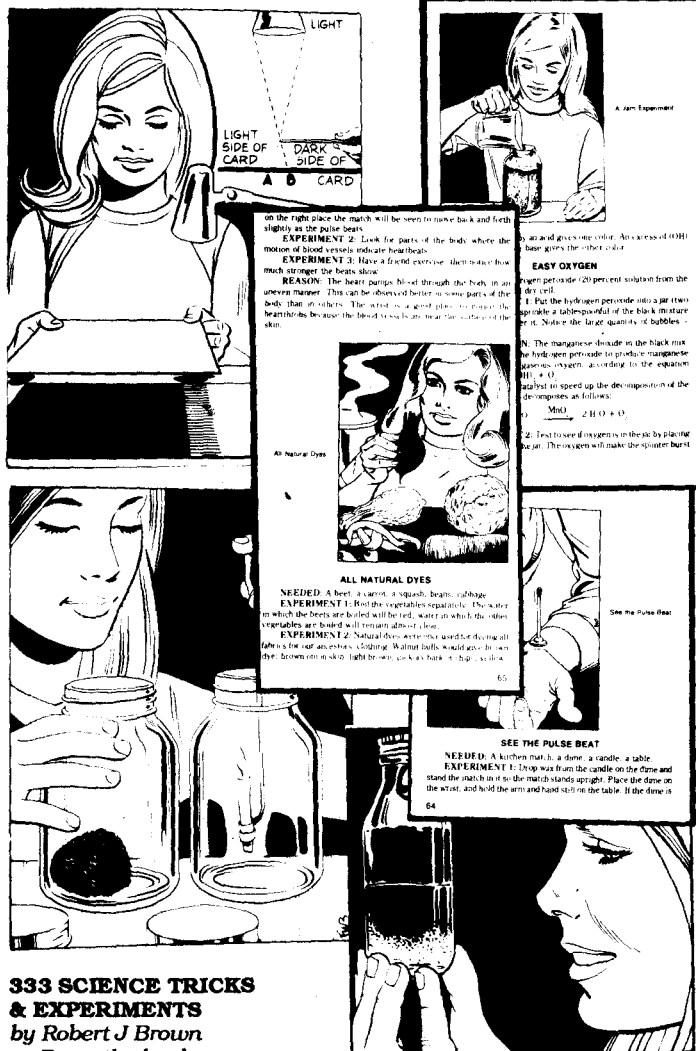
Both volumes in sewn hardcover bindings for libraries and collectors. Available in sets only. Relatively few hardcover volumes have been printed. Availability may be unpredictable.

Cat. no. 927 **SOLD OUT**

science fair project. Old book lovers will treasure this. And if you love machines, you will get hours and hours of enjoyable reading.

It's impossible to reveal the scope and beauty of these two books in the limited space this catalog provides. But take my word for it, these are fascinating books. Top quality. Expensive, but worth the price. Look them over carefully.

# Science Tricks & Experiments



## 333 SCIENCE TRICKS & EXPERIMENTS by Robert J Brown

From the back cover:  
"Includes many unique and unusual experiments and tricks not found in other sources! Every trick is fully explained so that even a child can easily follow the instructions! Only inexpensive, readily available materials are needed! And ideal source for school or science fair projects!"

Here's a delightful collection of tricks, experiments, and scientific demonstrations that highlight a variety of well-known and not-so-well-known scientific principles and illusions. From tricks based on inertia, momentum, and gravity to chemical electric and magnetic mysteries, this book is filled with projects that are guaranteed to fascinate both children and adults....

Compiled and tested by a well-known science lecturer and writer, these tricks include

many developed especially for Bob Brown's popular syndicated newspaper column, "Science for You..."

You'll want to try Mystery Ice, Elastic Soap Bubbles, A Simple Electroscope, A Cricket Thermometer, The Salt Shaker Mystery and more than 300 others. And every experiment is clearly explained and nicely illustrated.

Get a copy of this! It's a fun book! Loads of fun. 5x8 paperback 195 pages  
Cat. no. 571 \$9.95

## 333 MORE SCIENCE TRICKS AND EXPERIMENTS

by Robert J Brown

More great experiments to perform! 5x8 paperback 222 pages  
Cat. no. 572 \$10.95



# Science Fair Projects!

## SCIENCE FAIR Developing a Successful and Fun Project by Maxine Irtz

If you're like every other bozo, you'll wait until the last second to develop that required project for science class. And if you're like every other bozo on earth, you won't have any clever ideas, and you'll hate building it.

BUT IT DOESN'T HAVE TO BE THAT WAY!

Get this book and start a science project now. A project can be loads of fun! Yes, even I have had science fair projects like a four month set of experiments with new antibiotics, or the 400 pound computer built out of old telephone equipment that took seven months to complete.

You can have fun, and get an A, too! You'll learn about choosing a topic, getting organized, writing the background research paper, the question and hypothesis, the experiment, results and conclusions, best foot forward, and the fair!

You get all kinds of ideas for projects that students have successfully completed and



exhibited. You'll see how they got their ideas, planned and documented their experiments, and displayed their projects. This is not as great a science fair book as I would like to see, but in view of just how few there are, I'd say it's worth reading if you're planning to complete a project. Consider it carefully. 8 1/2 x 11 paperback 88 pages  
Cat. no. 755 \$9.95

## Lindsay, You're Disgusting!

Lindsay—

You're disgusting. I've been trained by [a well-known chain store] to stand in line and wait and wait while 97 employees stand around and watch one clerk trying to check out a long line of customers. I've been given training at [a well-known hamburger chain] to wait to be waited on then be served the wrong items.

All mail order companies take six weeks to six months to send the catalog much less the order. I sent for four catalogs the same day I sent for yours. I received my first order from your company before I received the first catalog from any other company. [Your fast service] is unAmerican. What if the government caught on that they too could be efficient? Think of it. It could ruin democracy as we understand it. Please stop [being so fast] before the IRS hears about your management policy.... but not before you send my order.

Larry Sturgill

# Experimental Physics

## Procedures in EXPERIMENTAL PHYSICS

by John Stong

reprinted by Lindsay Publications

If you consider yourself an experimenter, an inventor, or a builder of unusual machines and equipment, you must have a copy of this fantastic classic text. No two ways about it.

You'll find wall-to-wall practical how-to and incredible illustrations on almost every one of the more than 600 pages. Chapters include: laboratory glass blowing, laboratory optical work, technique of high vacuum, coating of surfaces by evaporation and sputtering, the use of fused silica, electrometers and electroscopes, geiger counters, vacuum thermopiles and the measurement of radiant energy, optics, photoelectric cells and amplifiers, photography in the lab, heat and high temperature, notes on the materials of research, notes on the construction and design of instruments and apparatus, and molding and casting.

This is some incredible stuff! Learn how to blow glass and make aspirators, distillation condensers, and so on. Learn how to seal copper to glass so that you can imbed electrodes. This could be handy for trying to make light bulbs, vacuum tubes, or x-ray tubes maybe.

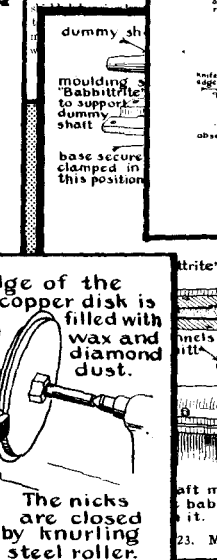
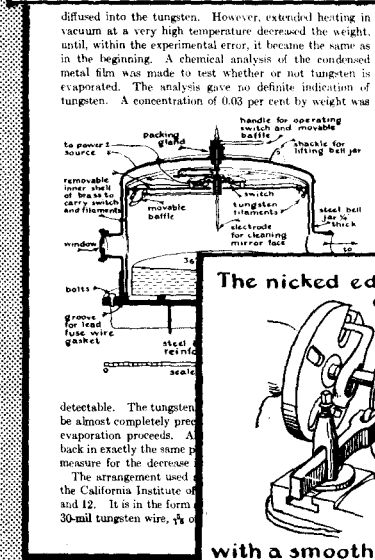
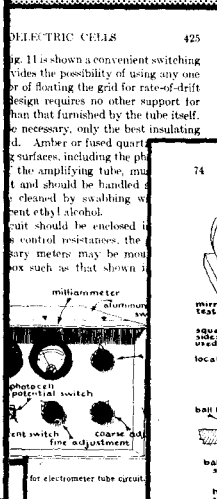
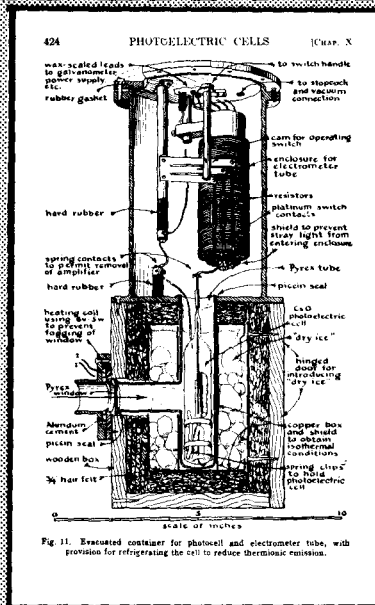
Learn how to rough cut lens blanks from large plates of glass and then grind them into lenses on your homebuilt lens grinder. Learn how to make a parabolic telescope mirror using the standard techniques. Learn to make unusual equipment to test the finished mirror. Learn how to grind a Schmidt lens.

To create high vacuum you'll read about roughing pumps, the vapor pressure of waxes, getters for creating the highest vacuums, and learn to make a variety of diffusion pumps using mercury and oil. See charcoal traps, kinetic vacuum systems, vacuum gauges of all types. Remember, all this comes with construction details.

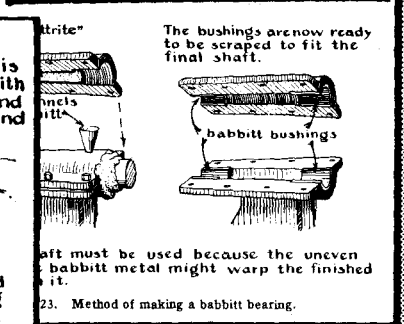
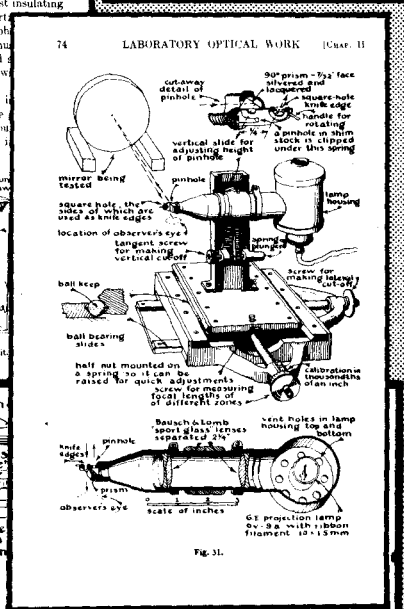
Learn how to silver mirrors with a variety of methods including vacuum sputtering. You'll find extensive details on the evaporation technique for aluminum.

Fused quartz is valuable because unlike glass it can withstand extreme temperature changes without shattering. Learn how to build micromanipulators and all the rest of the equipment to produce tiny fibers that can be used for suspending the elements of an electrometer, for cross hairs in optical instruments, or for building a balance. The microbalance shown is supposed to be sensitive down to a billionth of a gram per division!

And there's so much more! Build a Compton adjustable quadrant electrometer, a Hoffman electrometer, and others useful for x-ray and cosmic ray work. Build a Geiger counter. You can build your own Geiger-Mueller tube if you master the high-vacuum technique taught earlier. Unfortunately, most of the electronics described is



**Incredible  
laboratory  
processes  
revealed!**



based on vacuum tubes of fifty years ago rather than on transistors.

Build vacuum thermopiles that measure infrared, visible light and ultra-violet so accurately that they can be used to calibrate photographic lightmeters and such. You've heard of carbon arc lights, but do you know how to build *iron* arc lights? Or low pressure mercury arc lights? And others? You can even build a machine to measure the wavelength of colored light.

You'll find details on hydrogen furnaces, crucibles, burners, electric arc furnaces, and even a lab setup for making artificial rubies and sapphires! And there's much more - even down to what we consider the "easy stuff" like using a lathe and sand casting.

You should see by now that this is a fantastic book loaded with construction secrets for unusual equipment. And you should now understand how a book first

published in 1938 went through a couple of dozen printings! It's a classic. It's incredible. You should have a copy for reference if nothing else. Highly recommended. Order a copy today.

5 1/2 x 8 1/2 sewn paperback 642 pages  
Cat. no.4562 \$23.95

### Something you should know.....

This is no ordinary paperback book. "Experimental Physics" is printed on acid-free paper and is sewn like a hardcover book to prevent pages from falling out.

According to pricing formulas, it should sell for much more. If a book like this were released today by a certain major book publisher whose books I've carried from time to time, they would charge from \$45 to \$65 a copy. Maybe even more. At \$23.95 it's a steal. Get a copy.

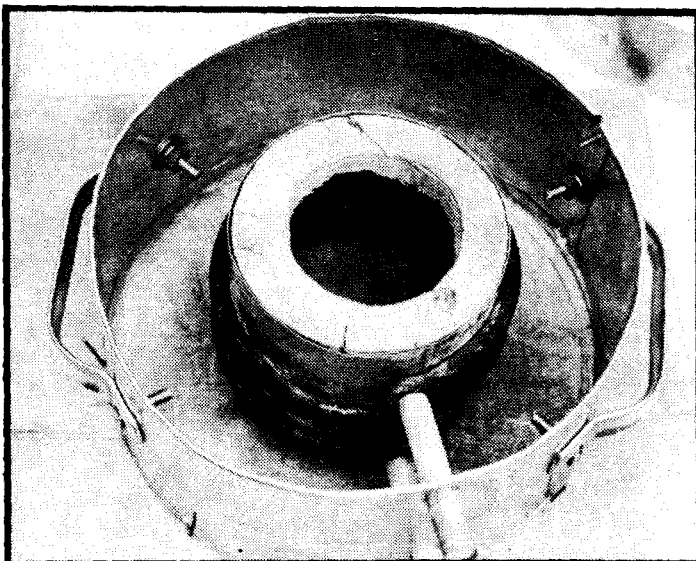
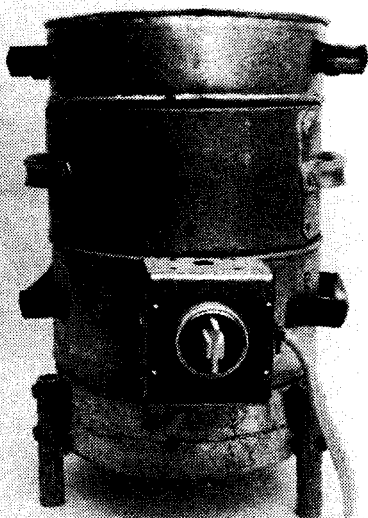


# Melt Metal with Li'l Bertha!

**Simple, low-cost, easily-built  
furnace melts aluminum & brass!**

## "LIL BERTHA" Electric Furnace by Dave Gingery

Let Dave show you how to melt aluminum and brass with electricity! If you have good ventilation and are careful, you can melt indoors, rain or shine. Electricity isn't cheap, but it's no more expensive than charcoal, and it's right there in the wall — all you need. Best of all, you can dial up the heat you need on thermostat, put the metal in the crucible, and go ram up your molds. After the metal melts, it will sit there at pouring temperature until you're ready. The furnace will practically watch itself.



You can build this high performance electric furnace that runs at 1800° practically forever for very little money. And it's surprisingly easy.

Not only that, you can use Lil' Bertha to calcine investment molds, carburize and heat treat metal, forge, temper, anneal, enamel, fire ceramics, and many other tasks. If you go to the trouble of getting the harder-to-find high temperature electric element, you can fire at 2300° for extended periods, making this furnace ideal for melting brass!

Dave will show you how to size the furnace to fit your needs, where to get and how to handle crucibles, make the electrical calculations, and more. This is typical Gingery material — top rate wall-to-wall how-to. Order a copy. 5 1/2 x 8 1/2 paperback 67 pages.

Cat. No. 4163

\$7.95

# Electric Arc Furnaces

## ELECTRIC ARC FURNACES

Two short but excellent articles from turn-of-the century mechanics magazines will show how to build an arc furnace with clay flower pots and carbon arc rods. Although they claim it is useful for melting aluminum, brass, and the like, I know there are some people using similar small furnaces to melt steel!

You run every risk in the book with these furnaces: fire, electrocution, poisonous gases, etc., but they can perform.

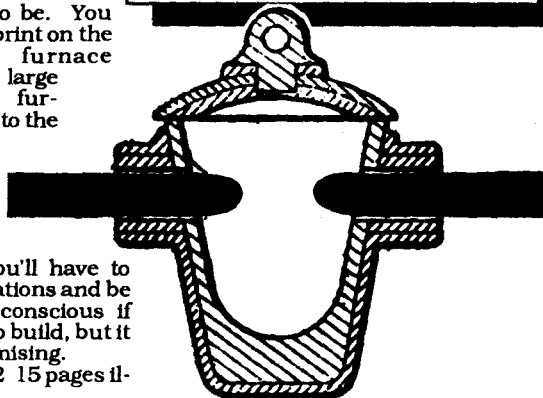
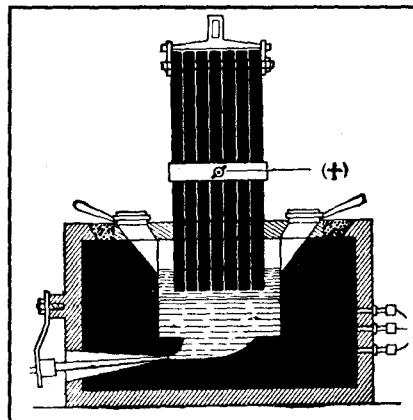
You get many pages of reprints detailing the history and variety of electric furnaces showing their electrode arrangements and how they came to be. You also get a reprint on the Stassano furnace which is a large commercial furnace similar to the two amateur furnaces described.

Fascinating reading. You'll have to make adaptations and be very safety conscious if you intend to build, but it sounds promising. 5 1/2 x 8 1/2 15 pages illustrated

Cat. No. 854

\$2.00

**Early furnaces provide  
ideas for modern  
furnaces...**



## Foundry Book Recommendations

You want to set up a foundry? But you don't know which book to order first? These are my recommendations:

1. **CHARCOAL FOUNDRY** by Dave Gingery — for the beginner, make the furnace and all equipment and pour an aluminum small casting.
2. **ORNAMENTAL CASTING** by Robert Whitmoyer — an extension of Gingery's book with emphasis on unusual molding techniques and decorative projects.
3. **GREEN SAND CASTING** — secrets of ramming up sand molds.
4. **PATTERNMAKING 1905** — how to make patterns used in sand molds.

Make a charcoal foundry, ram up sand molds, and pour molten aluminum. Once you've done that, you'll have a hundred questions on how to improve your work and how to make other molds and pour other metals. That's when you come back to this catalog and choose the book that specialized in your particular field of interest.

Get these four books to start. You don't really need anything else until you've made a couple of castings. And that's when the fun starts.

## Meet Dave Gingery!



One day he asked me if I were interested in offering his series of books on building machine tools from scrap for practically nothing. They're written for the guy who'd love to buy a lathe but is broke — in other words, most of us. He told me he had been doing just that for more than 20 years!

I said I was interested, but as usual, a little skeptical. When he delivered the first book in his series, I was amazed. As each new book appeared, my amazement grew.

Dave is proving that you can start with simple handtools and build precision equipment just like they did in the old days. First, you set up a simple foundry and build a lathe. You use the lathe to build the shaper which will cut the dovetails, T-slots, and gears for the milling machine. Next, you build the drill press. Finally, you can go back and build the accessories you need for your lathe and other tools: dividing head, screw-cutting gears, chucks, and lots more. A handy sheet metal brake is thrown in for good measure.

Long ago I said, "I'll believe this series of books when I see it!" I've seen it, but I still can't believe it. No one else can either. It's like magic. Give this guy a file, your aluminum storm door, and some charcoal, and he turns it into a precision lathe!

As you build each machine, Dave teaches you new skills in foundry, in mechanics, and in machining. When you're done, you end up with a complete machine shop that you've built, that you can use expertly, and you can repair should something go wrong. And best of all, you're a pretty darned good machinist.

It's a trade school for do-it-yourselfers. I've never seen a series of books like this, and I don't think I ever will again.

All of this may make me sound like a sideshow barker, but what I say here is what I honestly believe. Otherwise his books wouldn't have appeared in this catalog for so long. And wouldn't have sold as many copies as we have. You'll be impressed, too. This series is a must for any metal worker. Order a set today!

# Melt Metal!

- **Melt Aluminum with grocery store charcoal!**
- **Build an entire working foundry at low cost!**
- **Incredible book shows you how step-by-step!**

## CHARCOAL FOUNDRY

by Dave Gingery

You can melt aluminum, pot metal, and even brass with a very simple furnace using grocery store charcoal as fuel in a very few minutes you can melt beer cans, your wife's pots and pans, the siding off your neighbor's house, the pistons out of your car, and anything else you can beg, borrow, or steal. It costs very little to build the equipment, and it works incredible well.

All you need is an old metal 5-gallon pail, about \$6 worth of fireclay, some sand, a junk auto heater fan with a coffee can shroud (or a vacuum cleaner), and this book to build a high temperature furnace. My brother built the furnace itself for about \$7. The blower, cords, a pipe for a crucible, and the rest cost a few dollars more, but I can't imagine that the whole set up being more than \$25 - probably much less.

Some sandbox sand and fireclay will do very well for making sand castings. And all you need are some 1x4's and a few nails to build a cope and drag to make your molds. You wouldn't believe how easy it is to build a complete foundry.

After making a pattern (something that takes some skill), I rammed up a sand mold and fired up the furnace. In went the crucible around which I placed about 75¢ worth of charcoal briquettes. Into the crucible went beverage cans, an old electric iron, and a couple of pistons. After skimming off the dross, I poured the 1400°F metal into the sand mold. About 20 minutes later, I had a face plate casting for a small lathe. Since then I've made lots more castings, and you can too.

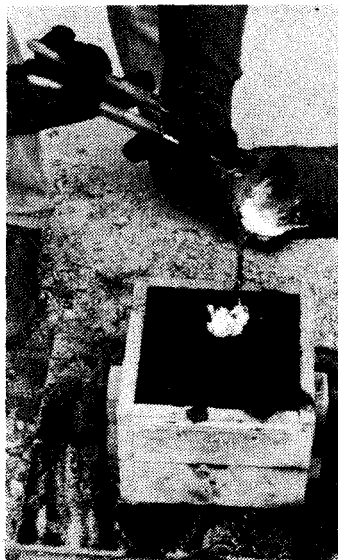


This is the first book in Gingery's series showing you how to build a complete metal working shop for almost nothing. You must have the foundry setup in order to build the lathe, milling machine and other tools described in each of the other books. Castings make strong and precise machine tools. You'd go broke buying the castings (if they were available), but you can make them for almost nothing with this setup.

Building machine tools takes hours and hours, but building the charcoal foundry is far simpler, and loads of fun. You can make castings for any purpose. Anyone can build a furnace, and almost everyone will become hooked on melting metal once they try it.

The "Charcoal Foundry" is a small book with big price tag, but it's worth every penny, and then some. Every page is loaded with practical how-to useful advice. This 1983 revised edition contains many, many drawings and many excellent photographs that will show you step-by-step how to build a foundry.

Highest recommendation! Top rate! Get a copy. 5 1/2 x 8 1/2 paperback 80 pages  
Cat no. 163 \$6.95



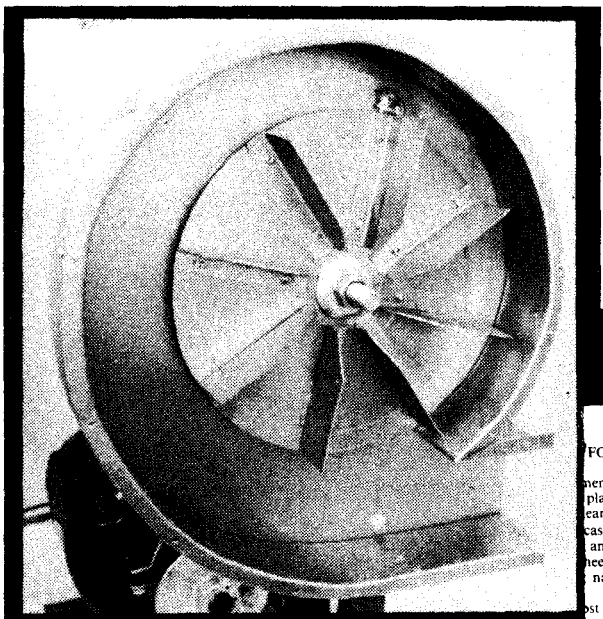
Use of pliers to hold crucible is dangerous and is NOT recommended!

# Design & Build Centrifugal Fans

**Learn to layout sheet metal transition pieces!**

**Build exactly the blower you need for your foundry furnace!**

**Build a vacuum system to remove dust and dangerous fumes from your shop!**



## How to Design & Build CENTRIFUGAL FANS

by Dave Gingery

"Centrifugal fans? Why on earth would I want to build a centrifugal fan? Used ones are all over the place. I can get 'em for almost nothing!"

Think again. Sure there are fans all over the place, but rarely will they do what you want them to. And that's the truth.

If you're building a small furnace to melt aluminum, you can use a salvaged fan. If you're going to build a brass or cast iron foundry, you'll probably need more pressure than a salvaged fan can provide. If you're going to build a dust collection system for woodworking tools, a welding booth, or a grinding wheel, you'll find that the blowers you need are not available at low cost.

Dave will show you how to design a fan with simple math that will provide the volume and pressure you need for the system you're building. With a pocket calculator

you can calculate the dimensions of the fan, the size of motor needed to drive it, and predict performance.

Then you'll be shown how to use pillow blocks, shafting, plywood, sheet metal and other common materials to build a dirt cheap blower that outperforms any make-do blower you might find on the surplus market. And it should, because you designed it to your needs.

Dave will also show you how to build a simple manometer and pitot tube. You can actually measure performance and fine tune your air system. Dave used this equipment to build and adjust a powerful gas burner for his iron-melting furnace now under development.

Learn how to build a dust precipitating cyclone, design sheet metal transition pieces (a very valuable skill), balance a dust collection system, build a static balancing stand, and more.

If you have read any Gingery books, you know what you're getting: top quality. You should have a copy for reference. This brand of simplified do-it-yourself knowledge is not available anywhere else. Recommended. 5 1/2 x 8 1/2 paperback 112 pages

Cat. no. 4600

\$9.95

### FORMING THE HOUSING SCROLL

Commercially built fan housing might be cast metal, plastic, sheet metal assembled by spot welding or seams, or sheet metal die-stamped and assembled. Occasionally, you may find a discarded commercial and modify it to accommodate a custom, home-made. In most such cases, you would make the narrower and reduce the size of the inlet and

most often it will be best to build the entire housing from scratch. Plywood used with a composition board like Masonite, in combination with sheet metal is a very convenient material with which to form a housing when moving room-temperature air. These materials will probably not be adequate for other gases and temperatures.

### BUILDING A PLYWOOD HOUSING FOR AN EXHAUST FAN

Two rectangles of plywood of 1/2" to 3/4" thickness will provide a solid support for both the scroll housing and the motor drive, whether it be a belt drive or a direct drive with the wheel mounted directly on the motor shaft.

The scroll sides can easily be cut from 1/8" Masonite and mounted on the plywood side supports with small screws. These sides act as a form around which a band of sheet metal is wrapped. Four or five carriage bolts pull the two plywood side supports together clamping the sheet metal scroll between them.

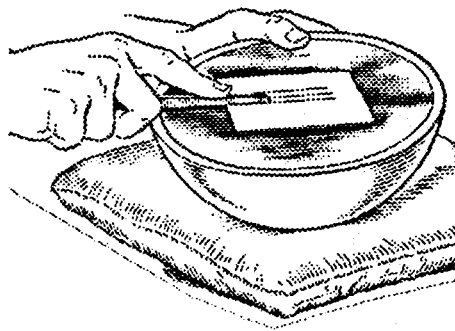
Since most standard motor shafts will probably be too short to reach through the full thickness of the support and the scroll for direct drive of the wheel, one side of the plywood side supports will need a large circle cut into it to allow part of the motor housing to extend somewhat into the fan housing.

Notice in the sketches that the center cut-out for motor clearance is only through the back support. The

38

# WORK PEWTER

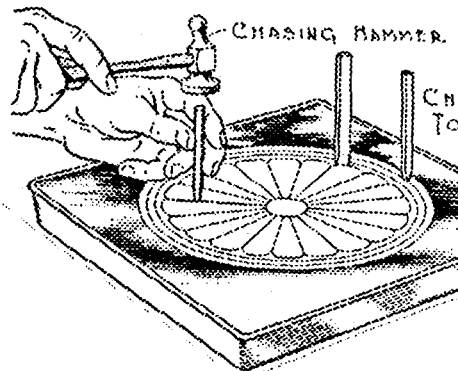
•Plaster molds for casting! •Beating Down & Planishing!  
•Spinning! •Cuttle Bone Casting!  
•Soldering! More!



## PEWTER-WORKING Instructions & Projects by Osburn & Wilber

As you probably know, pewter is a low temperature alloy of tin, antimony and copper (modern composition) that was used extensively for cookware by colonialists. It is a soft metal, easily melted and casted.

Here you'll learn how to make plates, pitchers, bowls and more using techniques that can be applied in other ways. Chapters include: the metal, designing pewter-ware,



layout and forming, soldering, plaster casting, beating down and planishing, raising, decorative processes, casting, spinning low forms, spinning high forms.

Dozens and dozens of drawings show such things as laying out and forming tools, equipment and techniques of raising, casting, slush casting, and much more. Of particular interest are the chapters describing in detail the lathe, tools and techniques for metal spinning, and provides several projects. Good information on spinning metal is difficult to find, and here's great info at a very low price. Even if you don't intend to make pewter-ware the skills taught here can be applied to other projects. Excellent book. A real value. 6 x 9 paper back

Cat. No. 1205

\$4.50



# Crucible Furnace!

**Melt aluminum, brass, and cast iron with gas!**

**Building a Gas Fired  
CRUCIBLE FURNACE**  
by Dave Gingery

Both Dave and I have long advocated that beginners should cut their teeth melting and casting aluminum. And an excellent simple, low-cost furnace for this is the charcoal furnace described in one of Dave's earlier books.

Once you have experienced pouring low-temperature alloys such as aluminum, you'll want to pour larger quantities of aluminum than the charcoal foundry can provide, alloys with higher melting points such as brass, and eventually cast iron. You'll also want to use a more convenient and lower-cost fuel. The gas-fired crucible furnace is exactly what you need.

Here you can melt up to 20 pounds of cast iron in a crucible. When the melt is ready to pour, both the top and body of furnace raise up so that you can grasp the white hot crucible from the sides which makes the crucible easier and safer to control than if you had to use tongs to lift the crucible as is done with other furnaces.

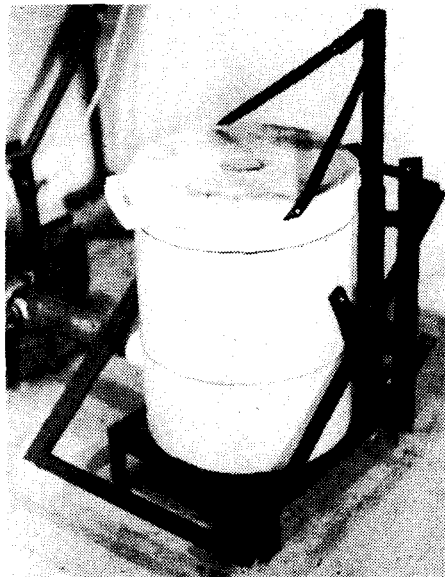
Charcoal is easily obtained and easily fired without complicated equipment. But it is messy and somewhat expensive. Gas is used here. It's low-cost and clean, but requires a more complicated burner. Dave will show you everything, including how to build the centrifugal blower, so that you get a hot, efficient and quiet gas burner.

You get wall-to-wall how-to — the detailed information that Dave is famous for. Six chapters cover basic design, building the furnace body, building the frame, building the burner, crucible and tongs, and operating the furnace. You get photographs, drawings and proven techniques.

If you have ever seen any Gingery book, you know how high quality this book is. Full tilt! Complete! Detailed! Excellent! You can pour your own cast iron castings, quickly and safely. Imagine the power that you will add to your machine shop fabrications skills!

Get a copy of this. Highest recommendation as always. 5 1/2 x 8 1/2 softcover 108 pages  
Cat. no. 1281

\$9.95

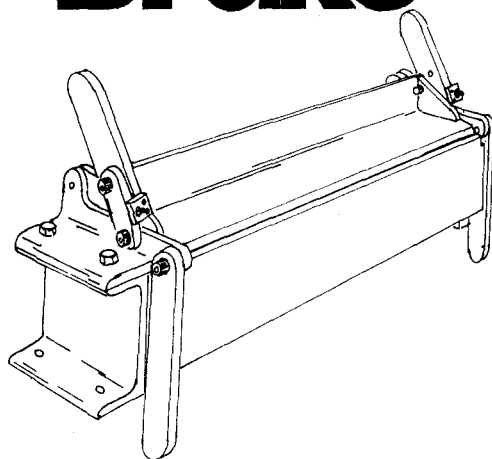


## Dave writes....

"The furnace looks good, and performs even better than it looks. All those who have been around forced draft furnaces comment on the low noise level when they see it operate. The retractable body and side loading make for the safest possible operation and the easiest lighting. The swing-away lid is super convenient for adding to the crucible during a melt. The furnace is not in the least intimidating to operate...."

I modified the prototype model several times and then built another from the instructions in the book in order to test the whole procedure. I think that the average home shop operator can easily have one built and operating in a leisurely two weeks of reading, gathering material and a few pleasant hours in the shop...."

# Build yourself a Sheet Metal Brake



## SHEET METAL BRAKE

by Dave Gingery

Working sheet metal without a brake is tough, to say the least. With a brake you can ducts, flashing for your house, boxes for tools and supplies — you name it. Dave told me he has built many brakes over the years some of which are still being used in industry.

You get far more than plans. Inside this 52 page paperback you'll find drawings, parts lists, how-to, dimensions and everything you need to know about building a brake. You'll find the plans scaled for an 18" wide machine, but you will also learn how people have been scaled it up to much greater widths. Dave will even show you how to use the brake to make common joints and bends.

People have written to say "that's my kind of book." And they're right. Dave takes you by the hand and shows you construction step-by-step, pointing what is and is not important in the design of the brake. You don't often see good plans for a brake, so order a copy. Top quality! 52 pages 6 x 9 paperback  
No. 161

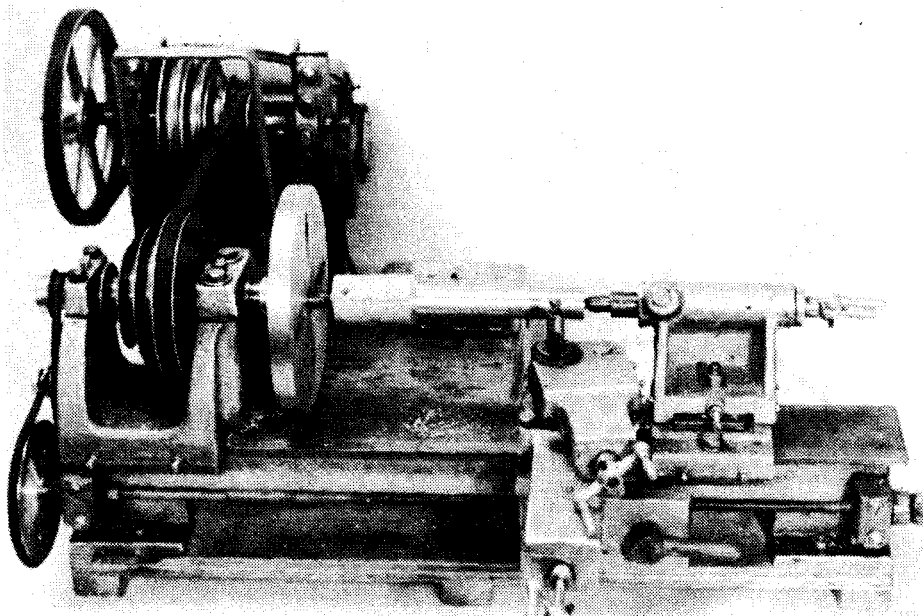
\$6.95

## "Build Your Own Metalworking Shop from Scrap"

All seven books: Charcoal Foundry, Build a Lathe, Shaper, Drill Press, Milling Machine, Deluxe Accessories and Sheet Metal Brake! Save \$5.40  
Cat. no. 929

\$49.25

# Build Your Own METAL LATHE



- Cuts Metal to 1/1000"
- No precision tools needed!
- Large 7" capacity!
- Prototype cost on \$50!
- Superior to "toy" lathes!

## BUILD A METAL LATHE

by Dave Gingery

You can build a sturdy, precision metal cutting lathe for much less money than you'd pay for one of those "toy" lathes on the market. And you can do it without precision measuring equipment other than a feeler gauge, and without other machine tools. Dave built two prototypes for less than \$50 each!

You end up with a solid lathe with 7" swing over the bed, about 5" over the saddle with 12" between centers. You can bore the headstock spindle and tailstock to No. 1 Morse taper if you wish. The size is limited by the size of the charcoal foundry with which you make the necessary castings. A larger lathe would need bigger castings for rigidity, but you could probably

scale this machine up with few problems.

I had a chance to use one of the prototypes. After a pass across an 8" long steel bar, my micrometer showed a taper of less than .001". Not bad for a \$50 homemade lathe!

Castings you pour with the charcoal foundry are the secret of building a quality lathe. The only tools you need are an electric drill, files, and other handtools along with a very simple homemade disc grinder fully described in the book. A table saw is very handy for making patterns, but not absolutely essential.

You get no chuck or screwcutting gears. They're described in Dave's book on deluxe accessories. They make life easy, but they're not absolutely essential. This simple lathe was all that was needed to produce the metal shaper, milling machine, drill press and the dividing head. If this lathe were a toy, or weren't genuinely useful, then it's unlikely that these other precise machines could ever have been built.

Can't afford a lathe? Then build one. It doesn't take much money, just lots of hours. Great book. No two ways about it. Order a copy today! 5 1/2 x 8 1/2 paperback 128 pages heavily illustrated. Cat no. 177 \$7.95

# You Can Make MIRRORS!

## How to Make MIRRORS

This publication supersedes Letter Circular No. 32, a collection of formulas for the preparation of silver on glass mirrors which was prepared to serve as a reply to the numerous requests for instructions concerning the preparation of mirrors. The frequency of these inquiries has increased. During the past two or three years their number has been particularly large because of the stimulus to the construction of reflecting telescopes by amateurs through the work of Ingalls, Porter, Gillis, and others. As a result, Letter Circular No. 32, in pamphlet form, has gone through a large number of editions, in the course of which many additions have been made based either on the growth of the Bureau's experience in making mirrors or on the requests for additional information received from our correspondents.

The present publication is a more complete revision with the scope of the subject matter enlarged to include the preparation of mirrors from materials other than silver and by processes other than chemical deposition. It deals principally, however, with the preparation of mirrors by the chemical deposition of silver on glass as this is the method of greatest importance for either scientific or commercial purposes. To the beginner this process offers certain difficulties which ordinarily vanish with experience, but which nevertheless necessitate a more or less definite period of apprenticeship. In order to shorten this period to a minimum, the technique of preparing the solutions has been described in great detail.

Silvering is not usually considered a dangerous procedure, but it is deemed wise to introduce the subject by a discussion of the incident dangers. The Bureau's experience and the instances referred to in the body of this paper emphasize the need for certain stated precautions and indicate that one is taking an entirely unnecessary risk, probably greater than is commonly realized, in silvering without goggles.

Three different formulas for deposition silver are given: (1) The Brashear process in which the silvering solution contains potassium hydroxide as well as ammonium hydroxide with sugar as the reducing agent, and processes employing (2) Rochelle salt, and (3) formaldehyde as reducing agents. Reference is then made to methods for the chemical deposition of copper, platinum, and lead sulphide for producing reflecting surfaces. Processes are also given for the production of mirrors by cathode sputtering and by the distillation of a metal to the surface which is to be made reflective. These last two methods serve only for the production of relatively small mirrors, but are of considerable importance in connection with the preparation of apparatus for scientific research.

reprinted from "The Making of Mirrors by the Deposition of Metal on Glass" --- Bureau of Standards Circular 389 --- January 1931

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## HOW TO MAKE MIRRORS

reprinted by Lindsay Publications

"The Brashear, rochelle salt, and formaldehyde formulas are given, together with a detailed discussion of the precautions which should be taken to avoid danger and the technique which has been found to yield the most satisfactory results at the bureau. Methods are also given for the production of reflecting films on glass by the chemical deposition of copper, platinum, or lead sulphide, by cathode sputtering, and by the condensation of vaporized metals."

Be warned that should you mix some of the chemical too strong, there may be a dangerous explosion. But the manual goes into great detail about eliminating the dangers, and the practice of silvering. It is written for the beginner and leaves very little to the imagination. Excellent! Get a copy to put in your library even if you don't intend to make mirrors anytime soon. 5 1/2 x 8 1/2 book-let. 15 pages 2 drawings. Cat. No. 885 \$3.00

## I NEED TO HEAR FROM YOU!

It is important that I hear from you. I want to know what things we do right as well as wrong. I want to know what books you think should be located and added to the catalog. I need to know anything that will improve our service to you.

Put your comments on a small piece of paper (separate from any order or other business) so that I can tack it up on my bulletin board. I CANNOT write a personal letter. If I wrote letters to everyone, I'd never get anything else done around here. And if I hired someone to write letters, I'd have to raise the prices of some books, or stop selling others.

I need to hear from you more than you need to hear from me. Comments, good and bad, are always welcome. So write.

## BUILD A METAL SHAPER

by Dave Gingery

You may have heard the shapers are obsolete. Maybe. Maybe not.

Truth is there is hardly a cheaper, quicker way to cut keyways, splines, gears, flat and angular surfaces, dovetail slides, irregular profiles and more. Most of this can be done on a milling machine, but often the milling machine must use an expensive cutter. A shaper, for instance, can use a .50 piece of tool steel to cut gears. No expensive cutters are needed.

This third book will show you how to build an excellent metal shaper featuring a 6" maximum stroke and a mean capacity of 5" by 5". The tool head rotates through 180 degrees for angular cuts, and features a graduated collar with a simple lock. Down feed has a graduated collar, and exact stroke length can be set.

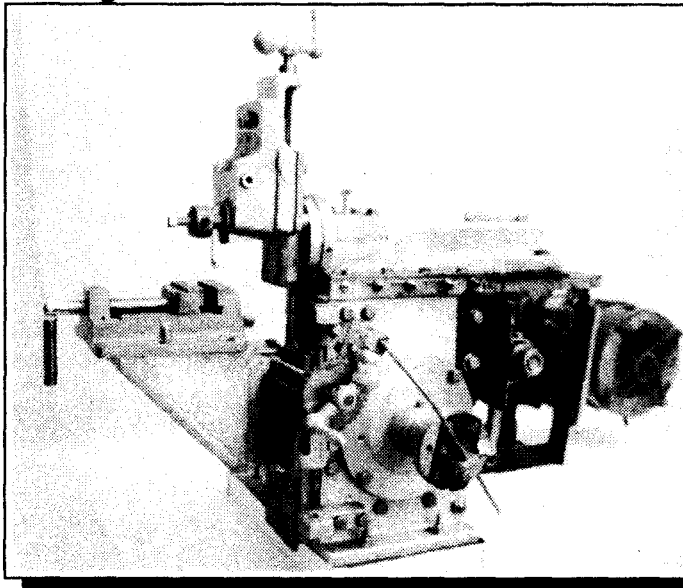
When you add these features to the inexpensive lathe bits it uses, and when you consider that this shaper has variable speed, automatic variable cross feed and adjustable stroke length, you can see how good a design this really is.

When Dave finished his prototype, he wrote—

*"The shaper is finished, and it surpasses my wildest*

# Metal Shaper

**Book 3 in Dave Gingery's "Build Your Own Metalworking Shop from Scrap" series...**



hopes. The automatic feed works beautifully. The adjustable stroke mechanism is smooth, quiet, and easy to adjust. The box slides are all ample, and I see no signs of yield in any of the members, even when taking a cut as deep as .100".

"There were plenty of areas that could have been a problem in the final tests, but the

## This planing machine uses low-cost cutters!

first setup was perfect, and she went right to work to plane off the surface of the table. Test cuts were made while rotating the step pulley by hand. Even at that point I know it was a winner for the cutter passed smoothly, without chatter. . ."

In this book you get dozens of drawings showing all the patterns, all the secrets, all the details, and easy-to-read

text, too. You'll need the charcoal foundry and the metal lathe already built. Like Gingery's other books, this one is jam-packed how-to. Great book! Order a copy of this classic! 5 1/2 x 8 1/2 paperback 144 pages heavily illustrated Cat. no. 187

\$7.95

## THE DRILL PRESS

by Dave Gingery

What a beauty! This drill press may be homemade, but it looks professional and works even better. Dave can tell you about it better than I can.

"I can't believe the capability of this machine. I put a 5/8" bit in the chuck, and it drilled through a 1/4" steel channel without a pilot hole. My wife said it looked like it was cutting cheese instead of steel.

Note the double reduction that gives a low speed of 260

rpm. That's why it can drill large holes in steel. I'm certain it can drill a 3/4" hole, and it may be capable of

drilling up to a 1" in steel. I don't have a larger bit to test. All of the small drill presses that I've seen have a low speed around 700 rpm. That means they only have a capacity of 3/8" in steel, even if they do have 1/2" chuck.

The spindle is mounted in ball bearings, and so is the countershaft for the double reduction. The driven pulley is mounted on a hollow shaft, supported by its own 1" ball bearings to run con-

centric with the spindle. No belt tension is transferred to the spindle.

The quill feed is 2 1/2", and it can be made longer. The quill is advanced by a unique cable winch mechanism. This is only a 1/16" cable, though it had ample strength to feed the 5/8" bit to produce a closely curled chip. It has provisions to adjust tension and backlash, which is very important for sensitive drilling with small bits at high speed.

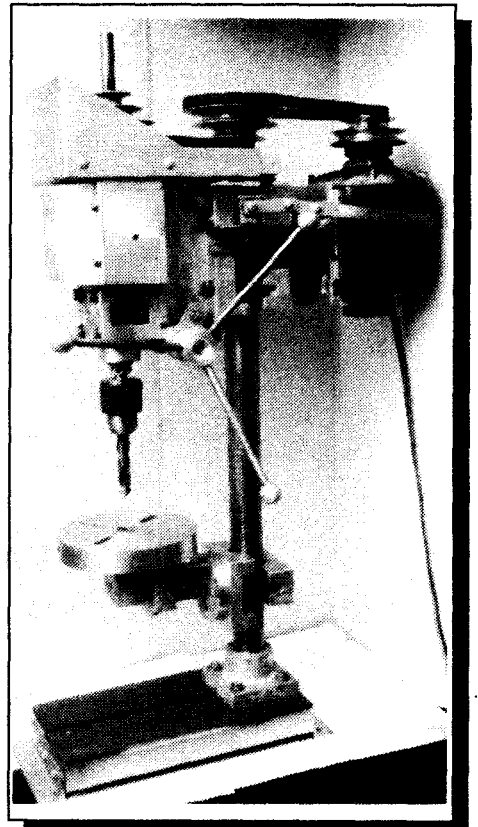
The machine in the manual is a 12". It can easily be scaled down about 1/3 or smaller, and it can be scaled up to a hefty floor model with ease.

None of the castings used the full one quart capacity, and all of them were machined on the homemade lathe. Only the spline on the spindle was done on the miller."

Sure, you can buy a drill press. But how many people can claim they've built their own? You can be one of the few. Order a copy of this and get started. Great book! 5 1/2 x 8 1/2 paperback 128 pages illustrated

Cat. no. 1133

\$7.95





# Build a Milling Machine

## MILLING MACHINE

by Dave Gingery

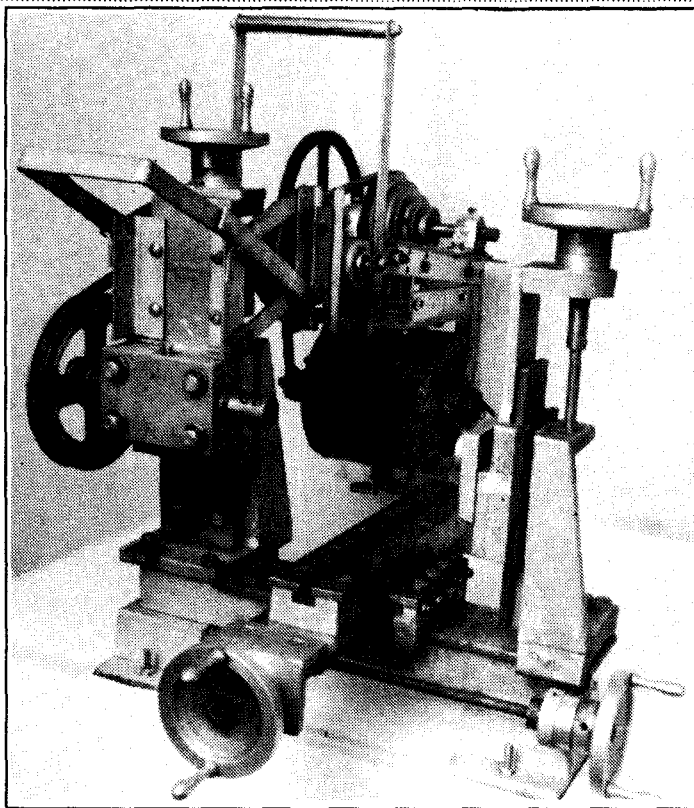
Dave can tell the story best:

"It's a horizontal miller, but it has the full range of vertical mill capability when used with the angle plate on the work table. Home shops will find a horizontal mill and a shaper to be not so nearly obsolete as the "experts" say, and even the smallest shop would soon outgrow one of those little toy vertical mills.

The work table 23/8" x 12" with a 3/8" T-slot, and it travels a full 12". The carriage travels 6 1/2" with the tail stand in use, and 8 1/2" with it cleared away.

It took over a month to design the transmission, and it works beautifully! Eight speeds ranging from 43 rpm to over 2430 rpm. I know of no other small miller except the Dore-Westbury that has such a range. . . The highest speed in the low range is 270 rpm, and it made a .035" cut in the end of the compound with the face mill set at a 3" diameter at that speed with no squawk or chatter.

I made the cutter on the lathe, but the miller is designed to make its own cutters for nearly every purpose. This cutter adjusts from 2 1/2" to 4 1/2". It's an aluminum casting, and it was cast with a steel core to leave the slot for the cutter bit. It shows no sign of failure after planing off the end of the compound. The set screws didn't loosen, and the casting wasn't strained in the least amount. That's after several passes



**Book 4 in Dave Gingery's "Build Your Own Metalworking Shop from Scrap" series...**

over a sandwich of 1/4" steel top and bottom, and an inch of aluminum between.

Anything is possible. It can make jigs or fixtures that are needed for any kind of work. It can make any type of style of cutter. You could even machine a blank or a Brown & Sharpe gear cutter, mill the lands, and grind the cutter right on the miller.

I'm really excited about this machine. It's much more than I thought possible when I began."

Build yourself a miller. If you've seen any of Dave's other books, then you know what's here - quality how-to. Wall-to-wall detail. Worth twice the price. 5 1/2 x 8 1/2 paperback over 150 pages

No. 1128

\$7.95

**"Don't thumb your nose at aluminum, cast it!"**

If you were to walk into a store and were to see a castiron bench vise sitting next to an aluminum one, you'd buy the cast-iron version, even if the aluminum model cost half as much. Why?

You never see aluminum vises. Why not? Is aluminum inferior?

The reason is the cost of material. If you were casting vises for a living, you could not scrounge up enough free scrap to turn out hundreds of vises. You would have to buy ingots or scrap, and you'd learn in a hurry that castiron is much cheaper than aluminum. You could put a smaller price tag on the iron vise, and that would make them sell. Aluminum is actually superior to castiron in many ways, but it's more expensive.

Need more proof? Consider this. If you want to pay extra, you can buy aluminum pipe wrenches instead of steel. They'll do the same job but aluminum wrenches are much easier to use when hanging pipe overhead.



There are high-tech aluminum alloys on the market that surpass castiron in almost every respect, yet they melt at 1000° F. The only problem is these alloys are more expensive than iron.

Castiron is superior for bearing surfaces because of the graphite embedded in its grain structure. If you need a bearing, bore the aluminum and press in a \$1.50 bronze bushing. That's even better.

Cost is no problem for us. We need only small quantities of metal, so we can accumulate scrap metal. When you consider that aluminum is in many ways superior to castiron, and is almost free if you want to spend the time to pick it up, it's foolish not to put it to extensive use.

Castiron has its place, and you'll want to pour it someday. But it pours at 2800° F, and that can be dangerous. You should "cut your teeth" on aluminum, and learn all the tricks of sand casting before you try the hot stuff. Ask Gingery. Ask anyone who's done it.

So, don't thumb your nose at aluminum, cast it!

# Build your own Deluxe Accessories

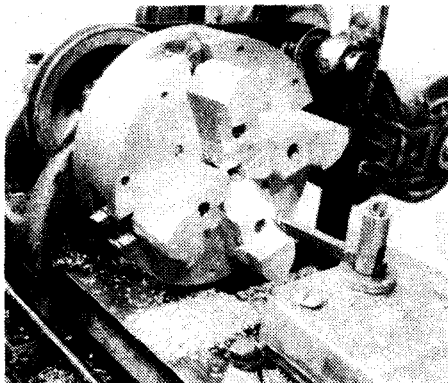
## DIVIDING HEAD & DELUXE ACCESSORIES

by Dave Gingery

By now you've built the lathe, shaper, milling machine, and the drill press. You've now have a shop full of precision metalworking tools that cost you practically no money. Now it's time to build fancy accessories.

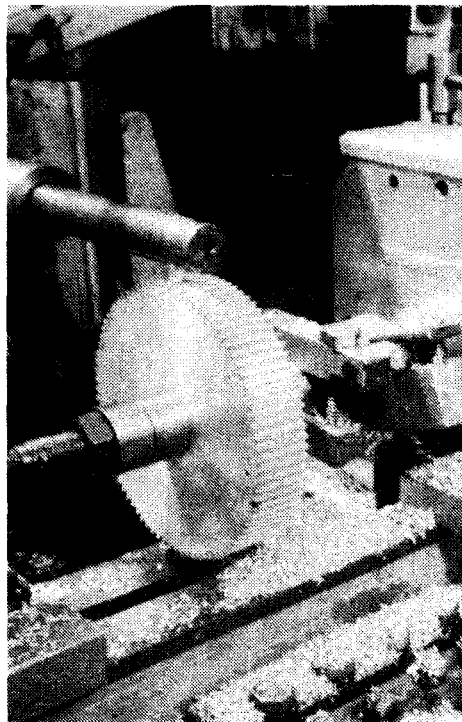
Chapter one covers "Tooling Up." You get a list of supply sources and helpful books, a review of basic tooling, and a series of simple lathes tools: compact clamp dog, heavier face plate, homemade hand reamers, a set screw chuck, expanding and threaded mandrels for facing gear blanks and for cutting teeth, plus a simple fixture for tapping truly perpendicular holes by hand.

The second chapter will show you how to build a simple two-jaw chuck that can be self-centering for repetitive work and a four jaw chuck with independent reversible jaws. Like Dave says, "You'll be glad you didn't blow your bait and beer money on a chuck when you see how easy it is to build one." Next, you'll build a steady rest.



This almost-essential accessory expands the capacity of the lathe for work that is too long to be mounted between centers. It's worth many times its small cost.

Then, you'll build the dividing head that serves as a rotary table, too. Few home shops have such an accessory, but you will. This beauty is built around a standard 40 tooth worm gear, providing all divisions through 50 and all even and multiples of 5 through 100. Many other divisions up to 1960 are possible, and it's easy to make a special plate for an unusual job. You'll be shown how it works, why it's so accurate, how to



build it and use it. The directions for drilling the fraction plates are especially valuable because they can be adapted to building a variety of other indexing fixtures.

Next, you'll cut professional quality change gears to add screwcutting capability to your homemade lathe. It's easy to machine the blanks to correct size and mill the tooth spaces. And you don't need expensive cutters. Dave will show you how to make your own for half a dollar!

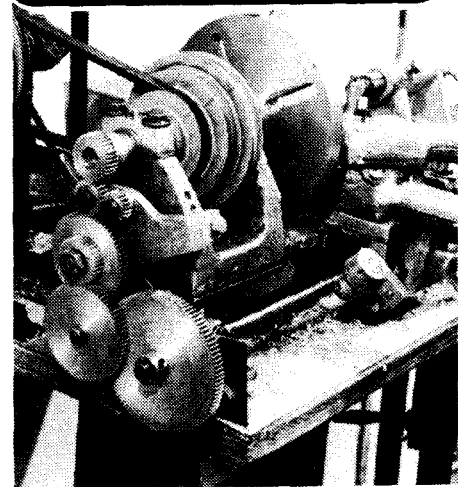
Finally, you'll be shown how to install these gears. A conventional tumbler plate provides left hand thread cutting, while the basic set of gears cuts all threads of standard inch sizes from 8 to 80 tpi. A fine feed range from .0025" per revolution to .005" is also provided. You even get a threading indicator for the carriage so that you can engage the split nut at the proper moment. It really is easy to add change gears once you how, and Dave will show you everything you need to know.

This book is worth many times its price. You don't believe me? Have you priced a rotary table? An indexing head? Even the simplest gears?

I showed some gears that Dave had machined to some women I know who don't know a lathe from a hockey puck,

## BUILD:

- indexing head
- face plate
- steady rest
- change gears
- mandrels
- chucks
- more!



and they couldn't believe something so precise was homemade. Even they could see the quality. You can machine gears every bit as good. Get a copy of this. Incredible quality. Very rare how-to. Order a copy today.

5 1/2 x 8 1/2 paperback

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# Repair Talking Machines



## THE COMPLEAT TALKING MACHINE

by Eric L. Reiss

Just stop for a minute and image. In front of you is this strange machine with a clockwork motor and a huge wooden horn. You slip a blue cylinder from its sleeve and onto the machine's spindle. Gently you set the stylus on the cylinder and release the motor. And out comes music! Speech! All kinds of sounds!

Today we take it all for granted. But when Edison invented the talking machine there was no way, NO WAY, to reproduce sound. That means no phonographs, tape recorders, no radio, no nothing. This incredibly simple machine literally set the world on its ear! The talking machine was as amazing as a flying machine!

Here, in one book, is a guide to buying and restoring a cylinder or early gramophone (disc) machine. You get all the secrets and know-how to remove decades of wear from components and get that old machine playing sweet music again.

Chapters include mechanics, acoustics, and cosmetics with several appendices thrown in. These chapters are broken down into reproduction parts, cast motors, cleaning, feedscrews and halfnuts, winding mechanisms, casting new parts, Edison bearings, Columbia cartridges, cylinder speeds and styli, diaphragms, pot metal problems, cleaning cylinders, horns and tone-arms, decals, refinishing, bedplate restoration, electroplating and much more.

You get a glossary, lists of historical names, soldering techniques, stroboscopes, and a valuable picture gallery of machines you'll want to collect. And the book is filled with photo after photo.

This is a must book for collectors, for the guy who wants to build his own talking machine in his workshop, and for the guy who just loves machines and early technology. This is a nuts-and-bolts book for the nuts-and-bolts guy. Order a copy. Fascinating book. 8 1/2 x 11 paperback 183 pages Cat. no. 1275 \$19.95

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### Mark's Standard HANDBOOK FOR MECHANICAL ENGINEERS 9th ed. edited by T. Baumeister

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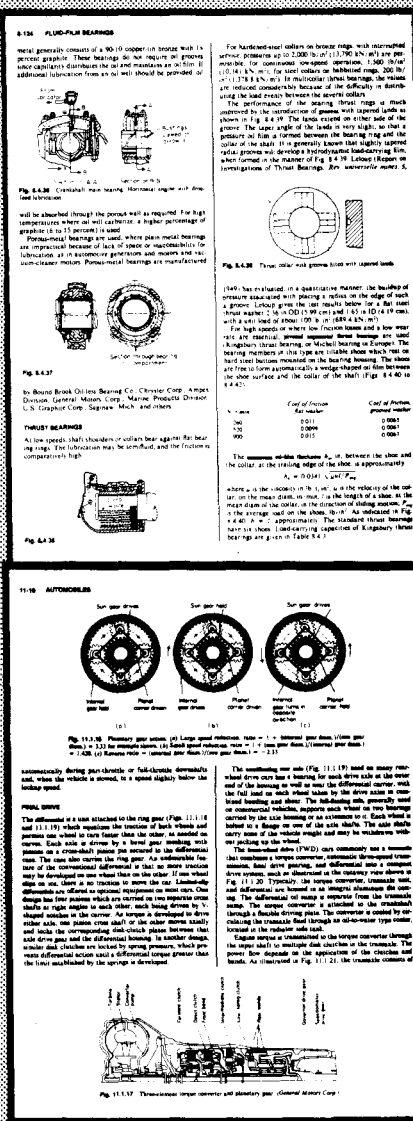
Engineers are supposed to know everything. So when they face a new problem, their first instinct is to read up on the topic whether it be boilers, conveyors, batteries, lubricants, coke, castings, bolts, or anything else. This is the book they turn to first. If it has anything to do with mechanical engineering, it will be here.

You don't have to be an engineer to own a copy of this encyclopedia. And you don't have to be engineer to understand and learn valuable lessons from the charts, diagrams, cutaway drawings and clearly written text.

When you have a question, look it up here. Which is more dense gray iron or castiron? What are the three methods for making steel castings? How many horsepower will a silent chain drive safely handle? What's a mechanical steam separator? What is considered runaway speed on a water turbine? What are the dynamics of a supersonic shock wave? What are the Rockwell hardnesses of different cemented carbides? To lift a 3,000 pound load what diameter would a nylon or sisal hemp rope have to be? What's the permissible mean bearing pressure in psi for the crank bearing of a steam engine? All the answers are here! And tens of thousands more!

This is a whole shelf of books rolled up into one volume, and is certainly worth having, even if you DO have to get a second mortgage on the house! This is concise information. No fluff, no filler. When an engineer picks up this book he wants answers FAST, so you know it has to deliver.

It's really too bad that it's so darned expensive, because almost anyone who reads this catalog would find this useful. If you find the price too high, consider putting it on your charge card and pay them back in installments. The point is, that, yes, it's expensive, but you get your money's worth and then some. No doubt some people would consider this a bargain, because if you bought separate books on everything covered here, you'd spend thousands. Look it over carefully. Top rate. 6x9 hardcover almost 1900 pages, 2,059 illustrations Cat. no. 145 \$89.00



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## RUNNING AN ENGINE LATHE

by Fred H. Colvin

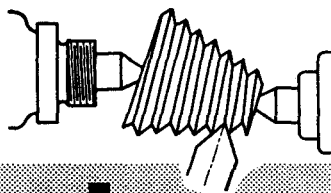
"Practical suggestions which will give the young machinist or apprentice the foundation principles of engine lathe work."

If you're just starting out

using a metal cutting lathe, or you're trying to learn techniques you feel you should have known all along, then grab this. This small, but jam-packed book will

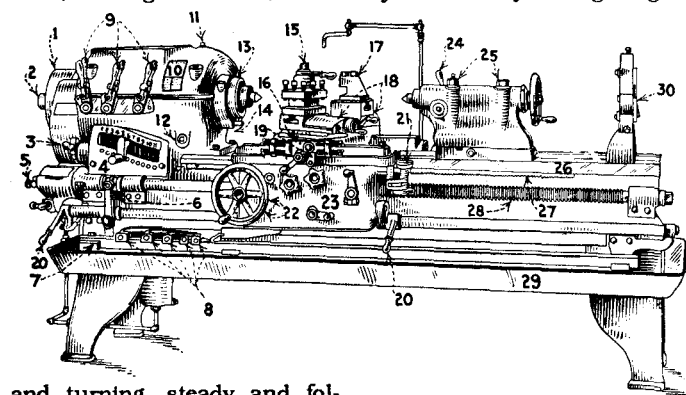
show you all the basic techniques of running a lathe.

Thirteen chapters cover the engine lathe, centering lathe work, driving the work, tools

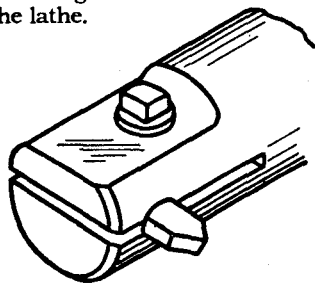


# Running an Engine Lathe

made follower rest, saving a poor casting, bridle for faceplate work, slotted chucks for flat work, precision drilling, boring cylinders, ways of figuring ta-



and turning, steady and follower rests, faceplate work, chucks and chucking, boring tools, taper turning, cutting screwthreads, test indicators and their use, three types of centering mandrels and care of the lathe.



You'll learn all about essential operations in easy-to-read

and understand text illustrated with simple, clear drawings. You'll learn about different kinds of dogs (not the barking type), split collars, toolholder and work with shoulders, boring the end of a bar, home-

pers, rapid thread cutting, cutting a double or triple thread, cutting Brown & Sharpe worm threads, using dial indicators, and much, much more.

There are many tables describing tapers, V threads, square threads, ACME threads, grinding angles on many different tools, and more.

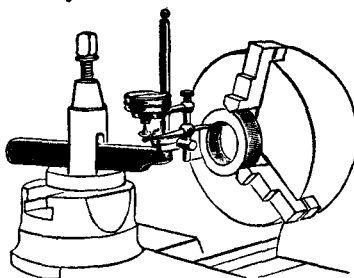
The author was an old man when he authored this in 1941. He was editor emeritus of American Machinist magazine, and was the Colvin of Colvin & Stanley fame that turned out American Machinist handbook and countless texts. The man was an expert machinist.

Here's a great little book at a

great little price that you can't afford not to have, especially if you consider yourself a beginner on a lathe. Excellent book! Bargain price. 5 1/2 x 8 1/2

paperback 117 pages  
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\$4.95



# Math You Can Use!

## PRACTICAL MATHEMATICS FOR HOME STUDY

by Claude Palmer

reprinted by Lindsay Publications

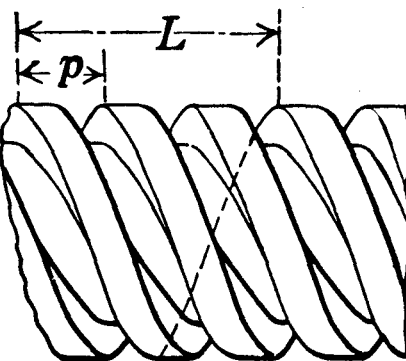
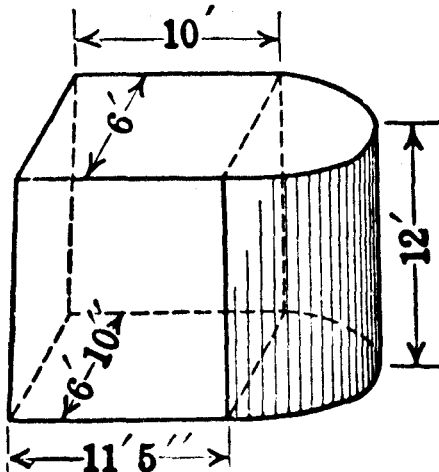
I have a number of math books which were candidates for reprinting, but I chose this particular book because it is written for mechanics, the descriptions are slow, long and easy to understand, and because the math presented is downright practical.

People laugh at me because I carry a pocket calculator in my shirt pocket like any died-in-the-wool nerd would. But the joke is on them. I discovered long ago that math is an extremely powerful tool that can save work, time, and money. Those laughing can't use this incredible tool. The basic math techniques I carry around in my head and use with my calculator are explained in this book from 1919.

Math is important to mechanics and machinists. It can mean the difference between having a design fail or getting it right the first time. If you're rusty on your math and need a good review, this is the book you should have.

Chapters include common fractions, decimal fractions, short methods, weights and measures, percentages, ratios and proportion, density and specific gravity, and powers and roots.

The geometry chapters cover plane surfaces, triangles, circles, graphical methods, prisms, cylinders, pyramids and cones, spheres, and other solids.



## Triple Threaded.

ft long. Find the ratio of their surfaces." After you solve the problem, you can check it against the answer given.

Another problem asks "To what diameter should a piece of stock be turned so that it may be milled to a hexagon and be 1 3/4 in. across the flats?" -or- "If a wrought-iron bar 2 in. by 1 1/4 in. in cross section breaks under a load of 125,000 lb., what load will break a wrought-iron rod 2 1/2 in. in diameter?" -or- "The pulley on the headstock of a lathe is 3 in. in diameter. This is belted to an 8-in. pulley on a shaft that makes 420 revolutions per minute. At what rate will a block of wood placed in the chuck revolve?"

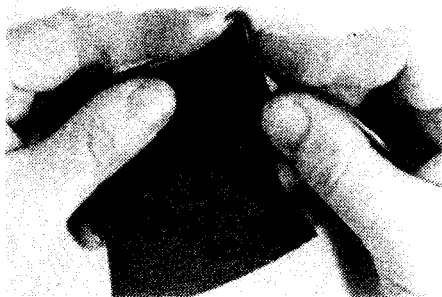
You'll be able to solve these and hundreds of other problems.

If you've forgotten the math you once knew, or you want to expand your abilities, get a copy of this. It's a big book loaded with valuable lessons. The price is a little bit on the expensive side, but the most comparable modern book I've seen sells for more than twice this one.

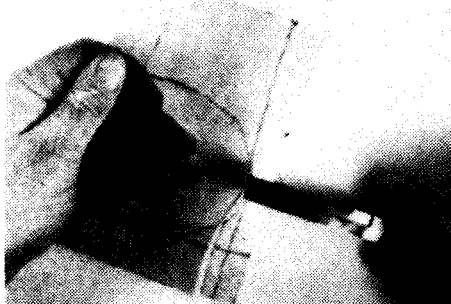
Get a copy and get going. It's an excellent text. A great reference. Worth having. Order a copy today. 5 1/2 x 8 1/2 paperback 518 pages

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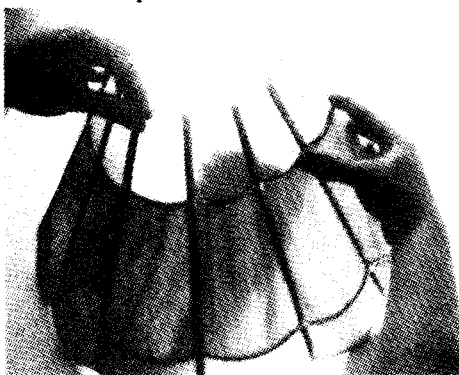


## How to Work in STAINED GLASS



### How to Work in STAINED GLASS by A & S Isenberg

"The Isenbergs' expert guidance, precise attention to detail, and problem-solving approach made [this] the one indispensable tool for hundreds of thousands of glassworkers over the past decade...."



Boy, that says it. This is the 2nd edition of a book first released in 1972. It's a goodie.

You'll find five parts: materials and equipment, procedures, projects, artists and their work, and the commercial glassworker. Yes, you even get a list of suppliers.

You'll learn how to use all the tools and decorative techniques to make windows, sun catchers, lamp shades, and more. You'll get tips and tricks for repair of old windows and lamps, and for selling the results of your handy work. Excellently illustrated. A top rate book. If you want to get started in stained glass, this is the book to have. Get a copy! 7x9 paperback 334 pages

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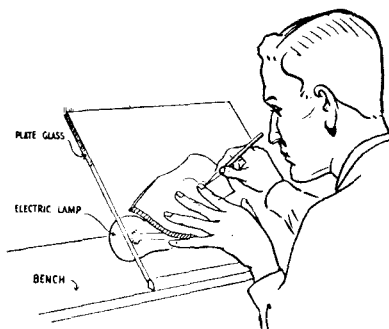
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# STAINED GLASS CRAFT!

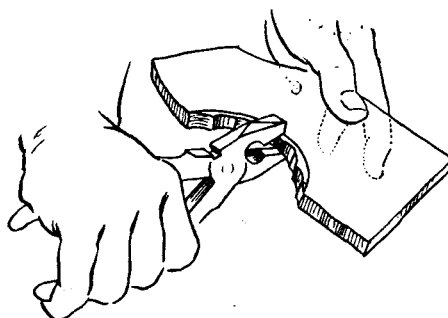
### STAINED GLASS CRAFT

by Divine & Blachford

"...prepared by two foremost British workmen and designers, it is one of the very few books that tell the beginner exactly what he needs to know: such topics as determining which side of a piece of cathedral glass to make the cut on, planning cuts to avoid accidental fracture and splintering, tap breaking, making circular indentations and eccentric shapes, avoiding design weaknesses, bending kames without closing them, holding kames in place, fitting glass, soldering, cementing, and similar material. All of this is essential to the craftsman who wishes to design and make his own freeforms, mobiles, pendants, or decorations...."



A lot of people are doing stained glass these days, and it looks like fun. If you're wondering whether it's worth trying, this is the book you should start with. It's low cost and tells you how to make everything from small decorative items to large windows. After you've read this, other more-expensive books will direct you in the specific direction you will want to go.



A great beginning book at a low price. Reprinted from the 1940 original. Even if you don't intend to do stained glass, you can learn to be an expert glass cutter. Order a copy. 5 1/2 x 8 1/2 paperback 115 pages

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# Stained Glass

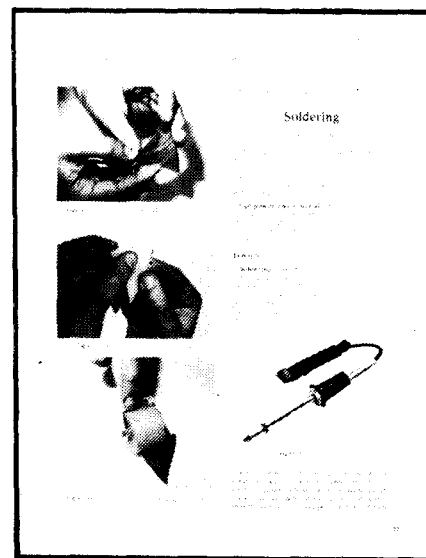
### STAINED GLASS CRAFT MADE SIMPLE Step-by-Step Instructions for Using the Modern Copper-Foil Method by James McDonell

This book "shows how anyone—even a beginner—can make beautiful stained glass objects using the copper-foil method. Connecting the glass pieces with the thinner, more pliable copper foil is easier on the fingers, and the material itself allows for more intricate, delicate designs. Because the



copper-foil seams are soldered over the entire length rather than only at the joints, stained glass designs made with this technique can withstand the weight of hanging better than those made with lead came.

This expert manual provides thorough



instructions with 44 photographs, drawings and diagrams to explain every step of the copper-foil method: patterns and pattern cutting, scoring glass, grozing, foiling, soldering, framing, patinas and more...."

This is an excellent, low-cost, well illustrated large booklet that makes me want to drop everything and try making a Tiffany-like lamp shade! If you're into this kind of thing, get a copy! You'll like it. 8 1/2 x 11 booklet 32 pages

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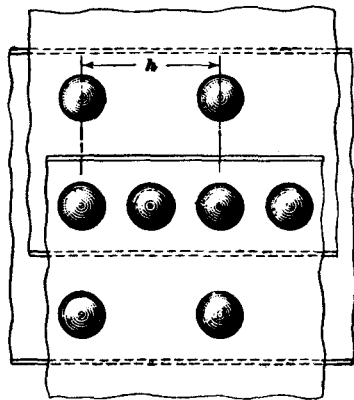
# Machine Design!

Make mistakes on the drawing board  
not in the shop!

## MACHINE DESIGN I reprinted by Lindsay Publications

Imagine this: you spend a year designing and building a complex machine, perhaps an invention that you hope will make you rich. But no sooner do you turn it on when the flywheel cracks and shatters, bolts strip out, the bearings burn, the rivets stretch out of their holes, the clutches slip, and the springs are stretched so far they're ruined! If you had used a pocket calculator and a few simple formulas during design instead of your usual "guess-and-by-golly" design method, you could have eliminated most of these troubles. What you need is a basic book on machine design.

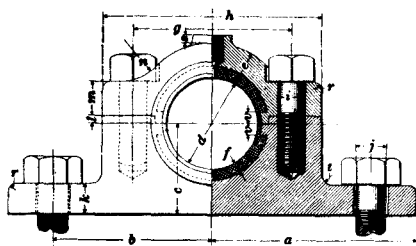
You can learn simplified



machine design from this 1907 text. Metals and materials have changed somewhat since then, but the principles and design formulas still apply. For instance to hold a load of 1000 pounds, how many threads on a 3/4" diameter square thread bolt will you have to grab? How many rivets and in what pattern will you need when you build your boiler? How big should keys be to transmit the needed shaft horsepower? How big should a bearing be for long life?

Volume I covers: all types of threads, their dimensions and strength, keys and cotters, rivets, journals and bearings. Every page is loaded with drawings, formulas, dimensions, rules-of-thumb, ideas, and details that I thought old machine designers took to their graves.

Get a copy of this, go through it, work a few examples and then put it on the shelf for reference.



When you have a question about strength of materials or machine design, this is the place to start. A good practical, basic book covering things that every machine builder should know. Simply written. Easy to read! A valuable book! Order a copy. 5 1/2 x 8 1/2 paperback 192 pages Cat. no. 4333

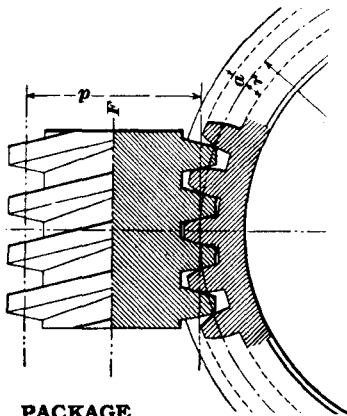
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## MACHINE DESIGN II

More valuable design information from 1907! Learn about shafts and couplings, springs, flat belt power transmission, rope and chain drives and extensive data on gears of all types. Lots of drawings, rules of thumb, practical formulas, and "useful theory" that will let you make your mistakes at the drawing board rather than in the shop.

More valuable information for the machine designer and builder. 5 1/2 x 8 1/2 paperback 192 pages Cat. no. 4341

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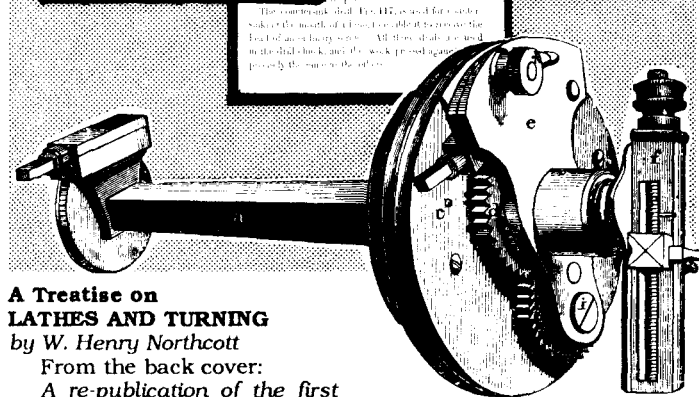
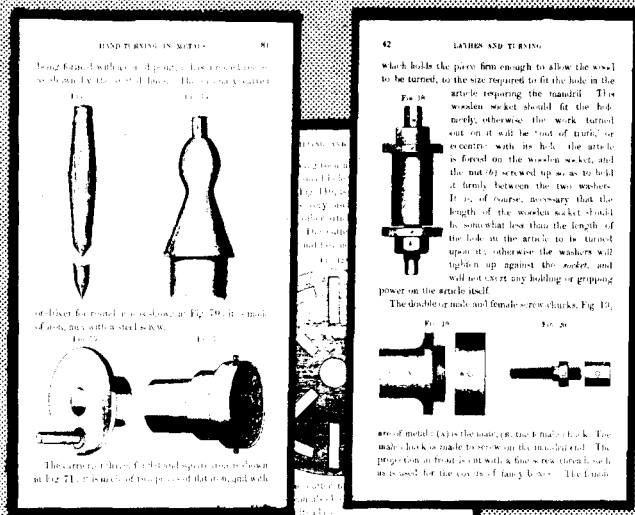
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Get both volumes of Machine Design at one discount price. Save \$3.00.

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# Lathes & Turning



## A Treatise on LATHES AND TURNING by W. Henry Northcott

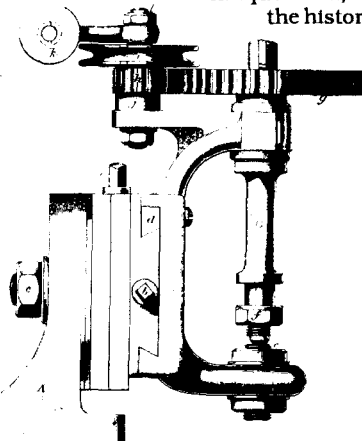
From the back cover:

A re-publication of the first edition of 1868, this important book was published during the 30 year gap after Charles Holtzapffel had died and before his son John took up the task of completing his father's explanation of lathe operations, from hand lathes to self-acting and screw cutting lathes. This is a valuable reference work for the industrial archaeologist as well as the student of turning. The last portion of the book deals with the use of the ornamental lathe.

Northcott's book is broken into four parts: introductory, hand lathes and their uses, self-acting and screw-cutting lathes and their uses, and ornamental lathes and their uses. Each part is broken into many sections that cover everything from turning wood and metal with hand tools to the complex eccentric and ellipse chucks needed to produce decorative patterns in wood.

You'll find many illustrations. Obviously, most of this is

more historical than practical, but then again, you'll find equipment, tips and techniques that are no longer discussed. This would be an excellent addition to your library if you're interested in unusual turning techniques and/or the history



of machine tools. Order a copy. 5 1/2 x 8 1/2 paperback 310 pages

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## MECHANIC'S NOTEBOOK

There are hundreds of books which are not really good enough to reprint. Yet, many of these books take a few pages to cover some topic in a way few other books do. Rather than reprint the whole book just to get those few pages, we've reprinted these pages as low cost notebooks.

Each of the notebooks that follow contain rare, top-quality information on an unusual topic. Much of the info is quite old and can be used to build replica's of early machines, resurrect lost technology, or suggest new ideas. This is great raw material for the creative technologist. All are 5 1/2 x 8 1/2 stapled booklets.

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Manville Shaper by Hendy Machine Co, Sellers Shaper, and discussion of Whitworth quick return motion. Unusual windmill designs from 1879. Magnets, composition and their manufacture. Gauges including details on 1856 Whitworth micrometer that measured in millionths of an inch! 24 pages  
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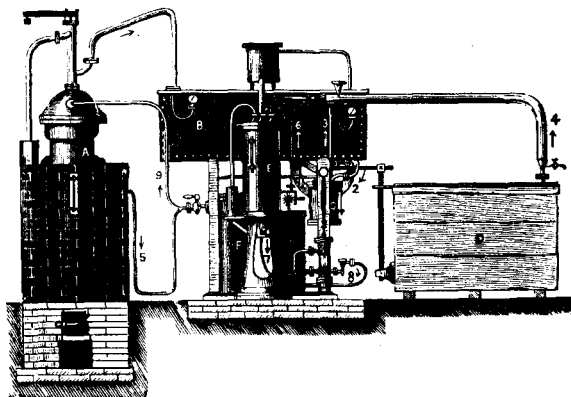
### Volume 12

Small cupolas: 12 to 18" diameter to melt 300-400 pounds in single heat. From 1884 American Machinist

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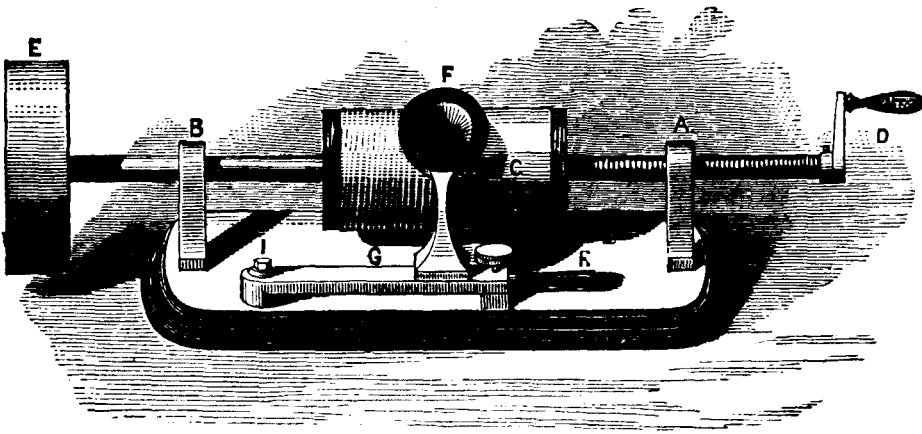
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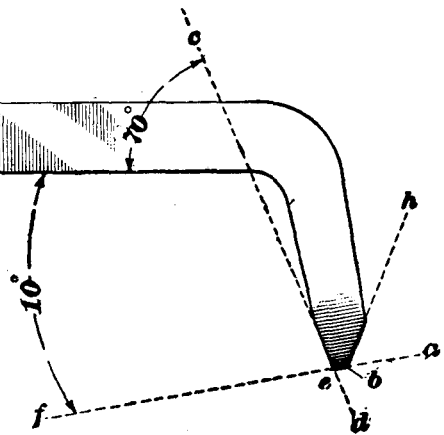
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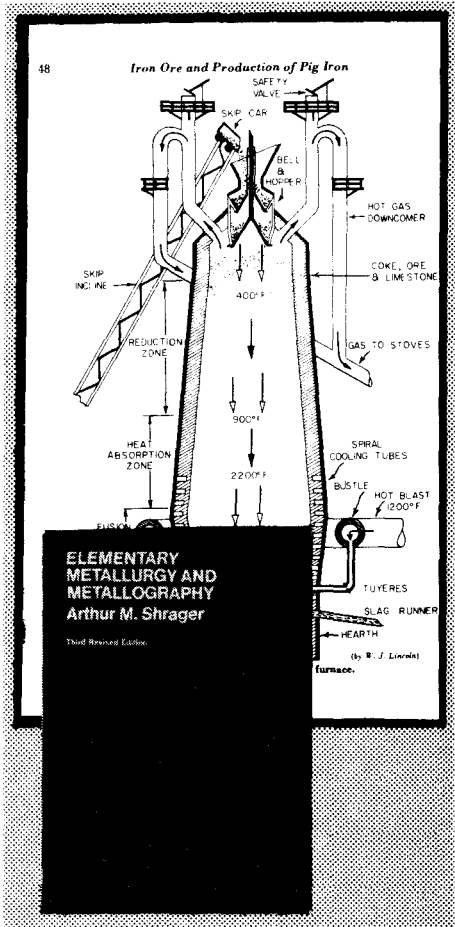
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## Learn Metallurgy!



### ELEMENTARY METALLURGY AND METALLOGRAPHY

by A. M. Shrager

You may be a real hot-shot with a lathe or arc welder, but do you really know how steel is made? Or what hardening and tempering is all about? Or about corrosion and rust? You should have a copy of this book in your library. You'll learn about Bessemer steel, arc furnaces working of iron and steel, heat treatment, annealing, surface hardening, alloy steels, corrosion, copper aluminum and magnesium alloys, zinc, control, testing, foundry practice and much, much more. You'll find this book is loaded with basic information that you can use to advantage in working metal. Loaded with illustrations. No math. Complete with appendix and glossary. You can't afford not to have a copy! 5 1/2 x 8 1/2 406 pages 3rd edition 1969  
Cat. no. 54 \$7.95

# Notebook 18

**Make lubricants, glue, gelatin, matches, and much more! 1886 formulas!**

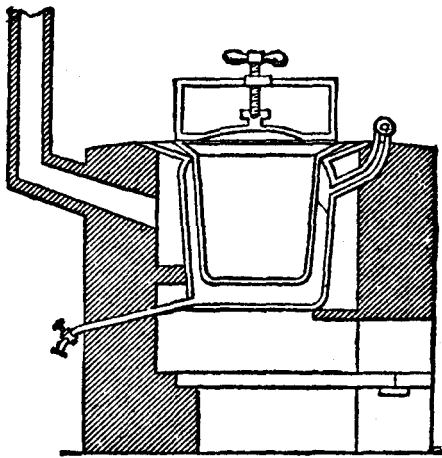


Fig. 23.

## MECHANICS NOTEBOOK 18 — Glue, Grease & Matches

reprinted by Lindsay Publications

From "The Techno-Chemical Receipt Book" (1886) by Brann & Wahl come formulas and instructions for making adhesive grease, grease for water-proofing leather, lubricants for machines, and more. Learn how to make glue and extract gelatin from hides, bones, and cartilage. Make isinglass (fish glue), printers's rollers from glue and glycerin, and more. Make Swedish matches, parlour matches, matches inextinguishable by the wind, and more. 5 1/2 x 8 1/2 booklet 15 pages

Cat. no. 846

\$2.00

# Notebook 19

**Electroplating, enameling castiron, silvering mirrors and more!**

## MECHANICS NOTEBOOK 19 — Lubricants, Enamels & Feathers

reprinted by Lindsay Publications

More from "The Techno-Chemical Receipt Book" (1886) by Brann & Wahl. You get oldtime chemical formulas and instructions for electroplating copper and nickel, nickeling iron without electricity, platinizing metals, plating with cobalt, plating with aluminum, gilding copper, silvering telescope mirrors, tinning cast iron, coppering bath for wrought and castiron, simple fire plating for iron and more.

Put enamel on castiron and sheet metal. Unusual information! 5 1/2 x 8 1/2 booklet 15 pages

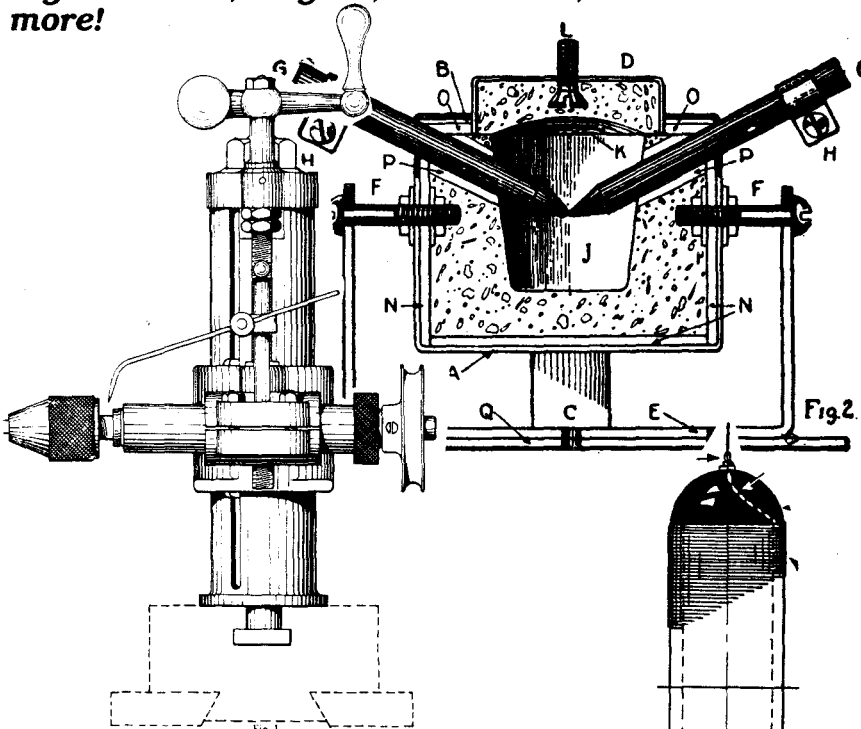
Cat. no. 847

\$2.00

# Mechanics Notebooks

## Notebook 20

**Unusual projects! Electric furnace, milling machine, engine, Tesla coil, much more!**



## MECHANICS NOTEBOOK 20 — Old Magazine Plans

reprinted by Lindsay Publications

Discover unusual construction plans from rare vintage magazines

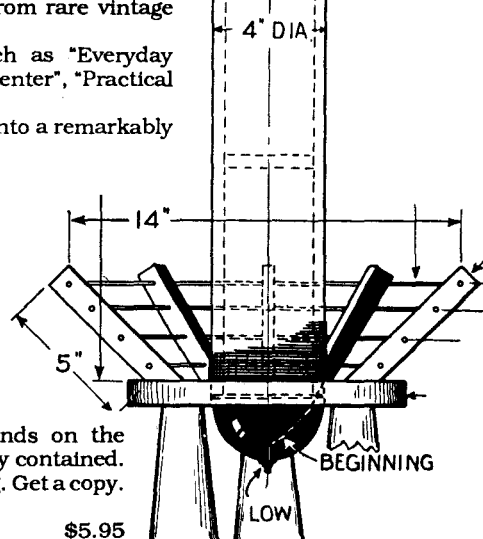
(September 1918 to February 1926) such as "Everyday Engineering Magazine", "Electrical Experimenter", "Practical Electrics" and "Science and Invention".

Build a guide that turns a common file into a remarkably good milling machine. Get two different sets of plans for building unusually sensitive laboratory chemical balances. Build a small electric arc furnace with water rheostat capable of reaching temperatures of over 6000° F, a small surface grinder having a 6"x6" table, and a universal lathe attachment that the author claims is good for surface grinding, indexing, shaping, planing and milling. Build a one-lung one-horsepower overhead valve gas engine from scratch, and even a 24" Tesla coil.

Although you may never get your hands on the originals, at least you can get the plans they contained. Any builder will find this fascinating reading. Get a copy. 8 1/2 x 11 booklet 22 pages

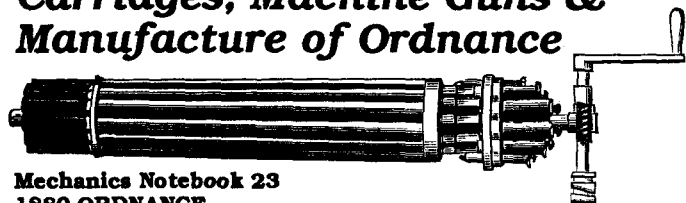
Cat. no. 848

\$5.95



# 1880 Ordnance

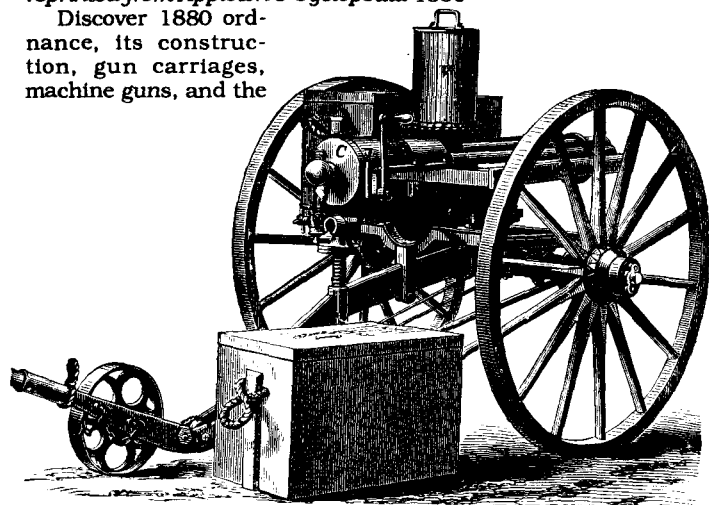
**Ordnance Construction, Gun Carriages, Machine Guns & Manufacture of Ordnance**



**Mechanics Notebook 23  
1880 ORDNANCE**

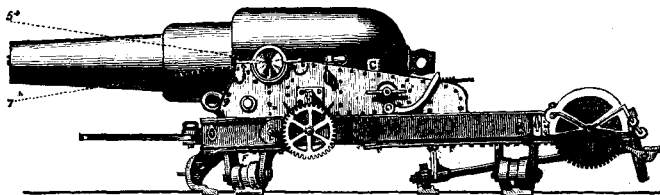
*reprinted from Appleton's Cyclopedia 1880*

Discover 1880 ordnance, its construction, gun carriages, machine guns, and the



manufacture of ordnance.

Learn about the improvements introduced in the Rodman gun, length of bore, strain analysis, gun testing, rifling, and more. Read about muzzle loaders such as the Parrott gun, the Armstrong



wrought iron construction, and other guns by Blakely, Vavasseur, Woolwich, Whitworth, Krupp, Dean-Uchatius, and Hotchkiss, not to mention mortars. Examine tables comparing the specifications of the guns in use in 1880.

Next, consider the problem of moving and aiming these heavy guns. You'll find details on the Navy Pivot carriage, the Broadside Scott carriage, Vavasseur's carriage, the Moncrieff system, Krupp's system, the Barbette Carriage, field carriages and more.

Study the Gatling gun, the Lowell Battery-Gun, the Taylor Machine Gun, and the Hotchkiss revolving cannon. All were machine guns.

Finally, learn about the kinds of metals used in making guns - how it was melted and cast. Learn about built up guns, boring techniques, and techniques of converting old guns.

You get great text, many illustrations and several tables that will give you a snapshot view of 1880 ordnance. Order a copy. 6x9 booklet 30 pages

Cat. no. 843

\$3.75

# Automobiles 1906

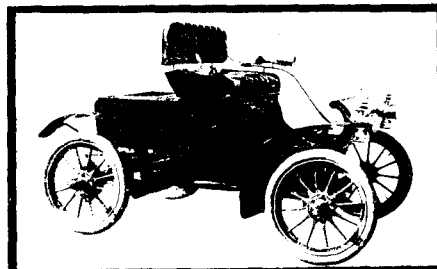
**Reprint of rare, early educational text! Fun reading!**

## AUTOMOBILES 1906

*by American School of Correspondence  
reprinted by Lindsay Publications*

Another book on automobiles? Well, not just another book.

Automobiles in 1906 were more-or-less still experimental having every type of conceivable drive train imaginable. It would be another two years before the Ford Model T would be launched and would begin the



tires, spark coil and magneto ignition systems, bodies, the Marmon V-4 air cooled engine, shock absorbers, and more. And all this was five years before the first Indianapolis 500 race was run!

The photographs are somewhat gray and "muddy" because the process of printing photos wasn't much more advanced than that of designing autos.

You'll find that this is not the most definitive book on autos ever published.

Not at all. But what you do get is a snapshot of auto technology

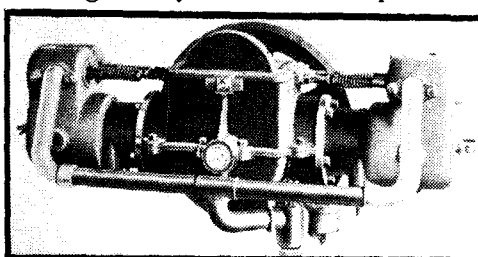
rapid standardization of the automobile.

This is a fun book with easy-to-read text and lots of illustrations from a five hp 1906 Runabout to steam autos. You'll see photos and drawings of early four-cylinder air-cooled engines, flimsy unbalanced crankshafts with enormous flywheels, a gasoline engine with revolving cylinders, unusual carburetors, Frayer-Miller engine parts, planetary gear system, sliding gear transmissions, variable speed friction drives, chain drive systems, steering wheel and steering lever systems, brakes,



created by those who were making it happen in the earliest days of the industry. This book is at least somewhat historically important, no doubt, but the important thing to remember is that you get a book that is just plain fun to read.

Get yourself a copy. The price is quite reasonable. It can be a great gift for an auto fanatic. Worth having. 5 1/2 x 8 1/2 paperback 88 pages  
No. 20307 \$5.95



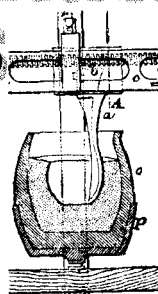
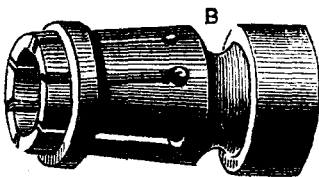
# Crucibles, Lathe Chucks, & Riveting Machines

## Mechanics Notebook 21 CRUCIBLES, LATHE CHUCKS & RIVETING MACHINES

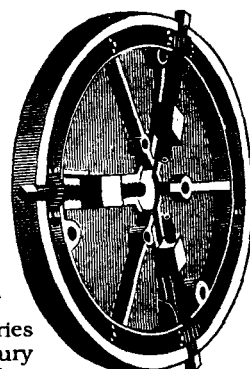
reprinted from Appleton's Cyclopedia 1880

Go back a hundred years, and learn the secrets of making crucibles that you can use for everything from assaying small amounts of metal to pouring hundreds of pounds of cast iron.

You'll discover several different recipes for fire clay mixes from which you can make crucibles. Learn how crucibles are how they're molded, and how they're fired. You'll even see a machine built specifically for turning crucibles. Finally, you'll get instructions for making your own graphite crucibles. Obviously, these two materials are not as durable as those used in today's



which turns intricate patterns, the cone plate chuck, and even expanding mandrels. You won't be shown how to build the chucks, but you will get an idea of the lathe accessories available a century ago and what they could do.



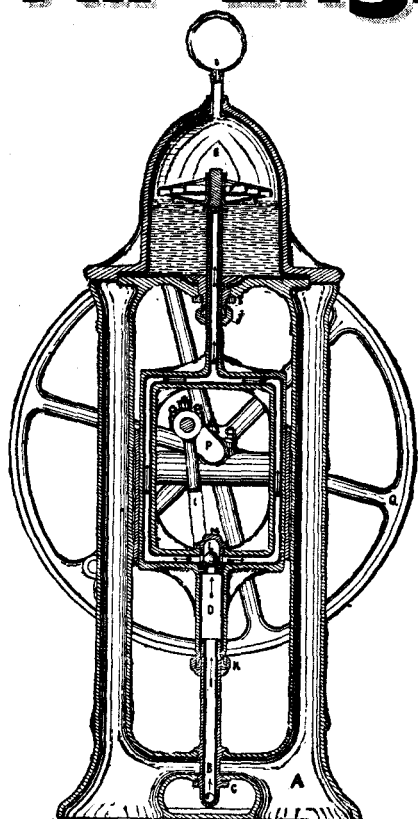
crucibles, but it can be fun to say you built a foundry and everything in it. Worth trying.

Next, study several well illustrated pages of lathe chucks. You'll see early forms of faceplates with angle plates, steady rests, and self-centering three-jaw chucks. But you'll enjoy the bell chuck, Frost's Variety Self-Centering Chuck, Vinton's Chuck, Ball-Turning Chuck, the eccentric chuck

Finally, you'll see three different machines - two riveters and a hydraulic pump - used to assemble everything from boilers to railroad cars.

Interesting, well illustrated. Great info for the money. 6x9 booklet 14 pages  
Cat. no. 841 \$2.50

# Carbonic Acid Gas & Air Engines

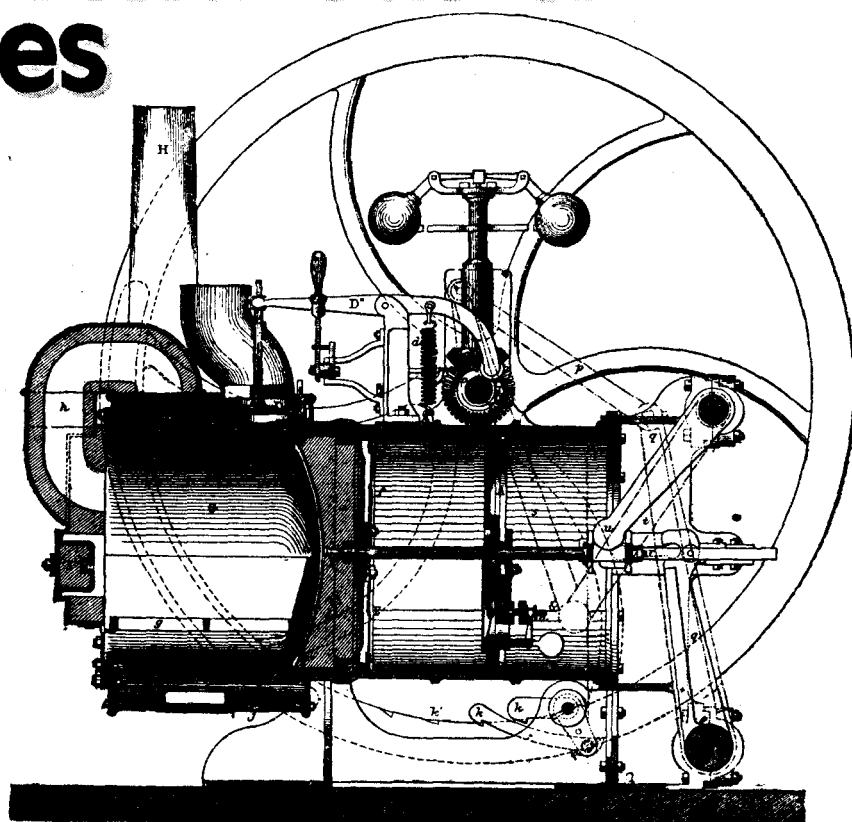


## Mechanics Notebook 22 CARBONIC ACID GAS & AIR ENGINES

reprinted from Appleton's Cyclopedia 1880

Carbonic acid gas is great stuff! Without it there wouldn't be carbonated soft drinks. But in 1880 it had other uses. It was even used to propel naval torpedoes!

You get several pages of great illustra-



tions and text revealing Victorian machines that created CO2 from marble dust and sulphuric acid, gas pressure tanks for storage and delivery to soda fountains, and even an early soda bottling machine.

Next, examine the state of the art in hot air engines. You get nine detailed machine drawings and extensive detailed text describing the operation of the engines. You'll see the engine invented by Robert Stirling in

1827 and put to work in the Dundee, Scotland foundry in 1840. Examine Ericsson's hot air or caloric engine. And you'll see two drawings that show the unique properties of the Shaw hot-air engine. If you're into early engines, you'll find this interesting.

Make soda! Build an engine! Here's the raw material to get your ideas flowing. Order a copy. 6x9 booklet 14 pages  
Cat. no. 842 \$2.50



# BUILD A VIOLIN!

# AMATEUR HOME MECHANICS

AMATEUR HOME MECHANICS

by George M. Hopkins

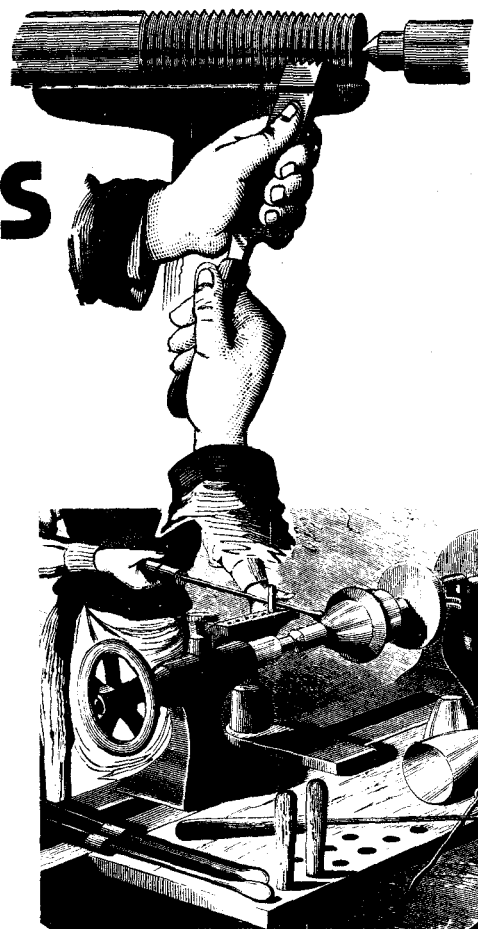
reprinted by Lindsay Publications

From the man who gave us the incredible two volume *Experimental Science* books available from Lindsay Publications comes this 1903 collection of interesting and useful projects and techniques.

Seven different chapters cover everything from woodworking to electricity. Articles include an inexpensive turning lathe, stained glass and objects of wire cloth, ornamental iron work for amateurs, forming plaster objects, sawing metal, soldering, grinding and polishing, silver work, the metal foot lathe, gear cutting apparatus, metal spinning, a home-made steam engine, a miniature caloric engine, an inexpensive water motor, wind pressure gage, rain gauge, simple hygroscope, how to make a telescope, how to make a sewing machine motor without castings, how to make an Edison dynamo and motor, how to make a telephone and much more.

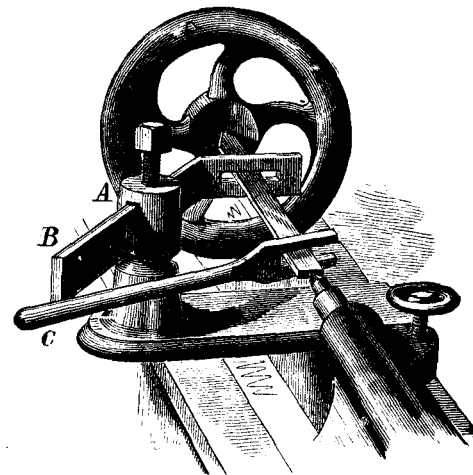
The truth is, the articles are not as detailed as I'd like to see them. For instance the great little hot air engine described is covered in just a few pages and with just a few illustrations and dimensions. But an enterprising machinist looking for a dynamite new project should be able use the detailed engravings to design and build an impressive working model engine.

You get hard-to-find, but brief informa-



tion on spinning sheet metal in a lathe. You'll learn how to make a telegraph, simple but effective batteries, and even simple electrical meters. And there's lots more!

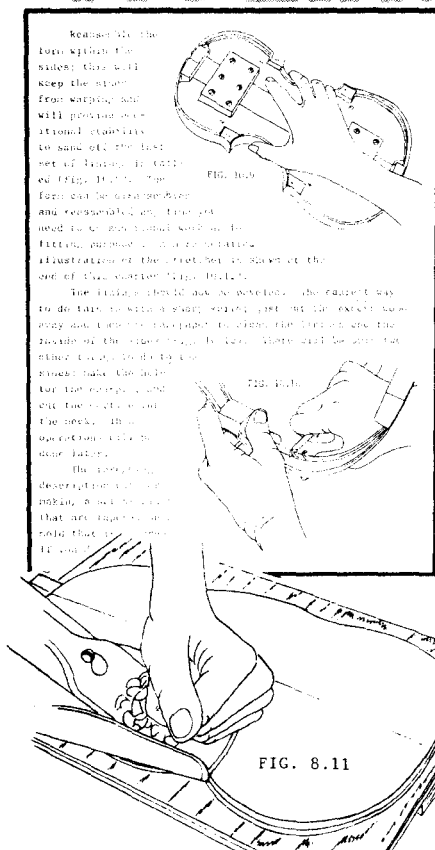
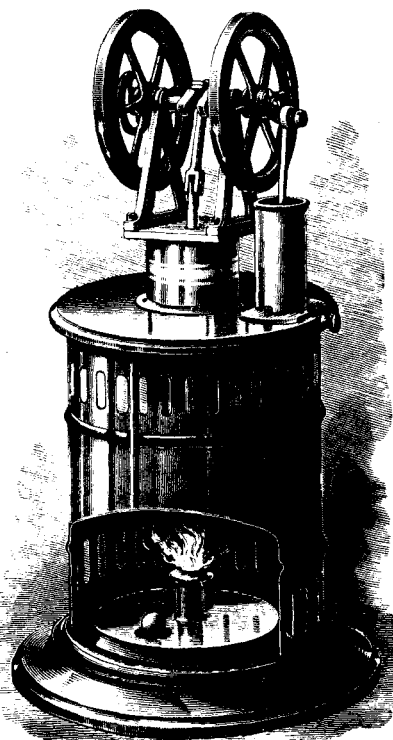
The illustrations are really great, the projects interesting, and the information is provided by a fanatic experimenter who wrote a immensely popular how-to column in *Scientific American* for years. Reading this book is almost like looking through his private notebooks.



If you're always looking for diverse how-to, consider this volume very carefully. It's great. Well illustrated. You'll like it. 5 1/2 x 8 1/2 paperback 370 pages

Cat. no. 4813

\$9.95



## THE VIOLIN BUILDERS'S PRIMER

by Houston Taylor

Don't laugh until you see this! Maybe you can tap 1/4-20 threads into a block of steel, but can you make a sweet-sounding violin? I doubt it. At least, not until you study this revealing manual.

Taylor is a college professor who builds violins. He wrote, beautifully illustrated, and published this himself. Learn about wood selection, making a bending iron, end blocks, a side mold, about glues, bending and fitting sides, jointing, arching, purfling, graduating the back, and all the rest that goes into making a violin that you'll be proud to own and play.

Dave "the mad machinist" Gingery read the manuscript before it was published, and almost ruined it by drooling all over it. He was so hot to make a violin (and probably still is), I wonder if he'll ever get back to machining metal. I must confess, I'd like to try it, too.

Rare information from a craftsman who has done it. Although this book is typewritten, the quality is excellent. The line drawings are incredible. If you have any leaning toward this sort of thing, I highly recommend this. 8 1/2 x 11 paperback, about 180 pages, heavily illustrated with several pages of plans.

Cat. No. 471

\$14.95

# English & American Tool Builders

## The History of Great Machinists and the Tools They Built!

English & American  
TOOL BUILDERS

by Joseph Wickham Roe  
reprinted by Lindsay Publications Inc

Sure, you can use a lathe and milling machine. But did you build your own? Do you know who built the first such machine tools? Do you know how they did it?

You've probably heard of Mr. Pratt and Mr. Whitney. And Mr. Brown and Mr. Sharpe, and Mr. Colt. You've probably even read about Maudslay, Nasmyth, Brunel and Whitworth. But do you really know who they were, and the accomplishments that made them the top names in field of machine tool development?

The answers are here in this classic history of the men who invented and perfected machine tools. You'll read about and see the French lathes from the 1770's, Wilkinson's boring machine, Samuel Bentham, Brunel and his shaper, Maudslay and his screw cutting machine. Discover a French screw cutting lathe from the 1500's!

Also covered are fascinating details of the careers and the inventions of Joseph Whitworth, Eli Whitney, Blanchard and his gun stocking lathe, Samuel Colt and his Amory, Root's chucking lathe, Francis Pratt, Amos Whitney, Frederick Howe, James Hartness, and others.

You'll see how one famous machinist learned his trade from another. You'll see early micrometers, milling machines and automatic lathes.

This is a fascinating book that any machinist who takes pride in his knowledge and skill will want to read. If you're just a dummy who wants to beat a piece of metal with a hammer, then skip this. But if you're curious about how machine tools developed the way they did, then you must have a copy of this hard-to-find classic from 1916. It will cost you much less than what I had to pay to get an original, and it's finally easy to get.

Great reading. It's entertaining and thought provoking. A creative machinist will probably pick up many ideas. For most of us it is just fun to dream about living in those times and hobnobbing with some of the most talented machinists that ever lived.

Get a copy. A must book for everyone who takes metalworking seriously. Fascinating reading. Top recommendation! 5 1/2 x 8 1/2 paperback 416 pages  
Cat. no. 4732

\$16.95

### HARDCOVER EDITION

A small fraction of the print run has been collectors. Supply may be erratic.  
Cat. no. 4740

Hardcover Edition  
not available  
at this time

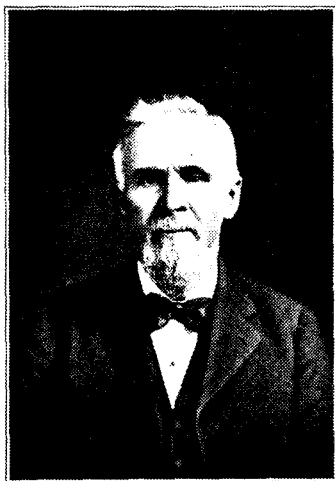
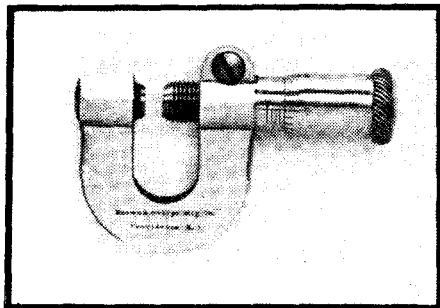


FIGURE 10. AMOS WHITNEY

# Toolmaking Secrets Revealed!

Learn precision machining  
techniques! Valuable hints & tips!

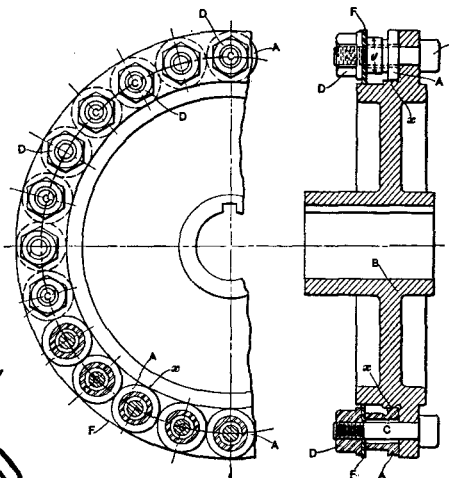
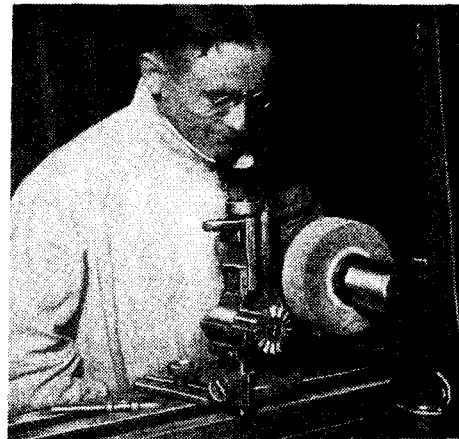
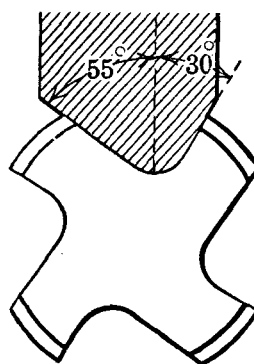
## MODERN TOOLMAKING METHODS

by Franklin D. Jones

The subtitle reads "a treatise on precision dividing and locating methods, lapping, making forming tools, accurate threading, bench lathe practice, tools for precision measurements, and general toolmaking practice." In other words, this book makes machine shop practice a fine art.

Eight chapters cover a multitude of advanced topics including square methods of determining angles, methods of accurately dividing a circle, generating a large index plate, lapping plug and ring gages, method of using a flat lap when lapping flat surfaces, making straight forming tools, method of grinding a hardened forming tool, grinding curved surfaces, making concave forming tools in milling machines, making accurate thread tools, testing the lead of a thread, grinding threading die chasers, making accurate arbors, sharpening angular cutters, sharpening end mills, relieving the formed teeth of cutters, grinding reamer teeth, hobs for worm gears, precision jig work in the bench lathe, internal grinding in bench lathe, truing a bench lathe bed, and on, and on.

You might consider this to be hints



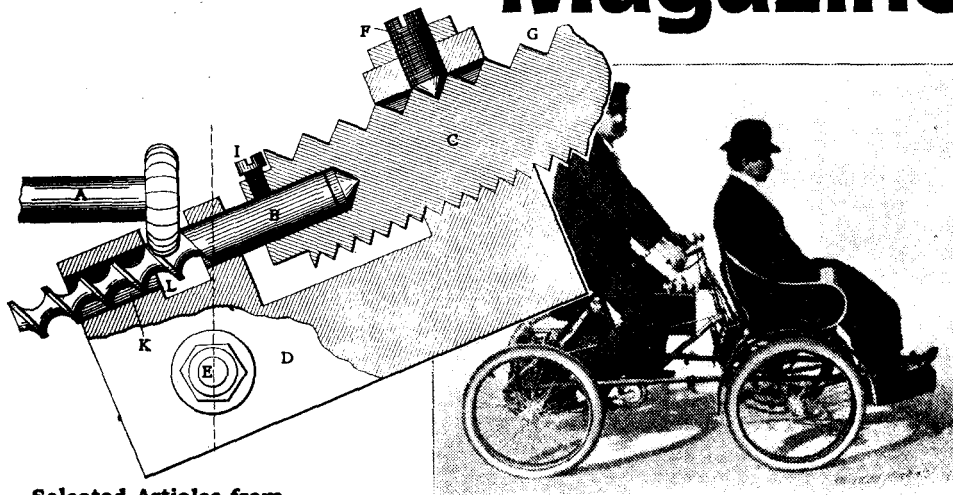
and kinks for the real pro, the machinist's machinist. The book dates back to 1915. Alloys have changed since then, and we seldom use belt-driven machine tools anymore, but the tools and techniques described are still in use and quite valuable.

This seems to be a much better than average collection of toolmaking instructions. There's much to be learned here. So just don't sit there, order a copy and get started. 5 1/2 x 8 1/2 paperback 309 pages  
Cat. no. 4724

\$10.95

Selected Articles from the

# 1896 American Machinist Magazine



**Selected Articles from  
1896 AMERICAN MACHINIST MAGAZINE**  
reprinted by Lindsay Publications

From out of the pages of American Machinist Magazine come these, the most interesting and best illustrated articles on everything from steam automobiles and

early motorcycles to testing lathes and pouring babbit bearings.

You get thirty two fascinating articles that will entertain you, educate you, and will certainly fire your imagination. You get page after page of mechanical drawings and photos (a rarity in 1896). You'll find that 1896 American Machinist is wall-to-wall enjoyment as you can see from the illustrations reproduced here. Get a copy. It's very reasonably priced. You won't regret it.

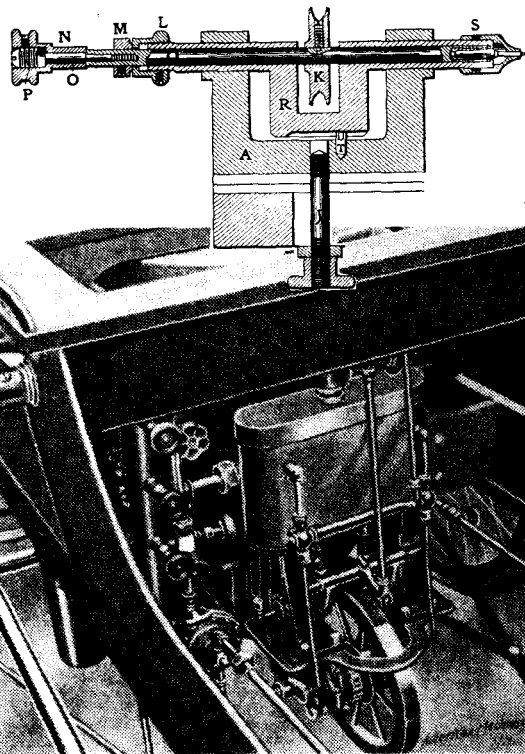
8 1/2 x 11 paperback 64 pages.

Cat. no. 20242

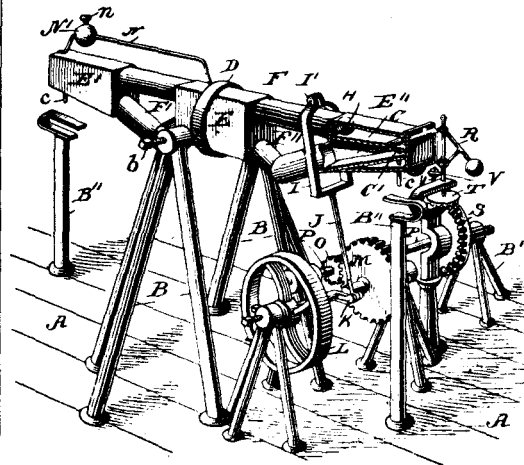
\$6.95

## CONTENTS

Perpetual Motion Financiering; Making Original Index Plates; A New Pantagraph; Tools for Lathe Testing; Slotting in the Lathe; A Tapping Tool; Making an Accurate Index Plate; A Talk on Brass Founding; Three Modification of the Geneva Stop; Screw Cutting with the Circular Saw; A Complete Ball-Bearing Tool-Post; Micrometer Lathe-Carriage Stop; Two Good Taper Boring Bars; A Job of Boring; Casting a Fly-Wheel; A Machine Tool of the Last Century; Molding Connecting Rod Brasses; Testing Machine Tools with the Micrometer Caliper; Babbiting Split Bushings; Testing the Accuracy of a Lathe Without Special Tools; Milling Spirals in the Lathe; A Counter-boring Lathe; Special Drilling Tools; Spring Winding Attachments; The Electric Vehicle Company; A Steam Road Carriage; A Bezel Turning Tool; Casting a Corliss Cylinder; Death of Joshua Rose; Steam Driven Road Wagon; A Link Motion for Steam Motor Cars; Practical Motorcycles at Charles River Pk, Boston, November 9; Accommodation Jig



## FIFTY Perpetual Motion Mechanisms



### FIFTY PERPETUAL MOTION MECHANISMS

by Fred Dieterich  
reprinted by Lindsay Publications

The author was a patent attorney at the turn of the century. I suppose that so many people considered themselves inventors and presented him with so many headaches that he wrote a book entitled "The Inventors Universal Educator" covering the process of securing a patent. It sold for many years starting 1899.

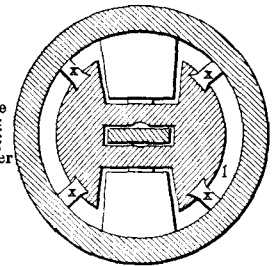
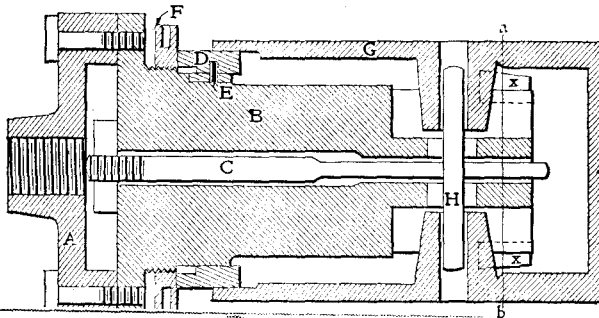
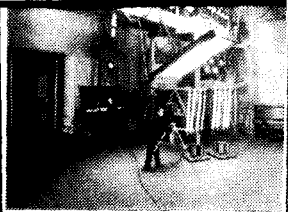
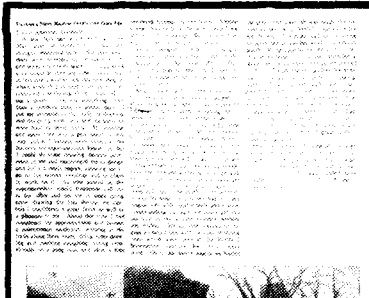
One short section of his book covers perpetual motion inventions which are unpatentable. Dieterich, who was outraged by claims of perpetual motion, presents drawings of 50 different mechanisms. No doubt, you've already seen a number of these, but others are unique, and all are interesting.

You'll see the Marquis of Worcester wheel, the Horace Wickham machine, the 1868 device of Dr. Drasch of Austria, an electric device, the self-moving railway, the Orfyreus 1720 wheel, a complicated water screw, and others.

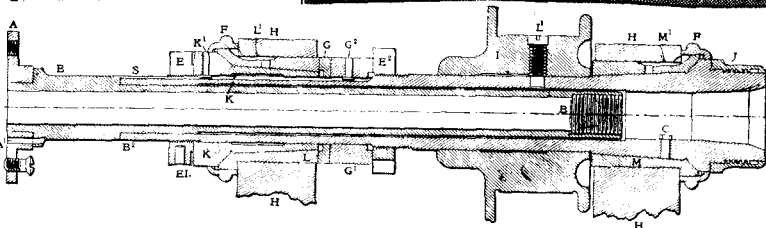
If you're into PM, you'll want to add this to your collection. Maybe you're trying to build a machine and want to avoid previous failures. Or you're a skeptic and want a good laugh. Whatever, the material is interesting and the price is low. Get a copy. You'll like it. 8 1/2 x 5 1/2 booklet 22 pages  
Cat. no. 898

\$3.75

# Selected Articles from American Machinist 1904



Section a-b  
American Machinist



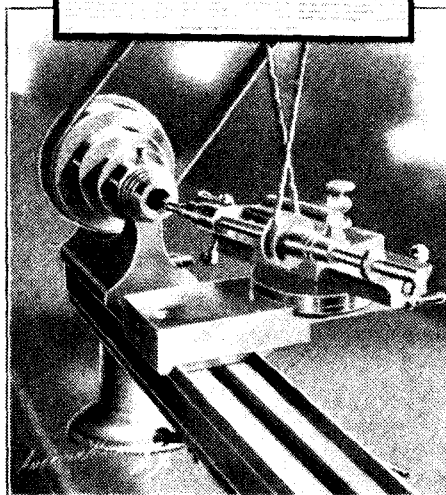
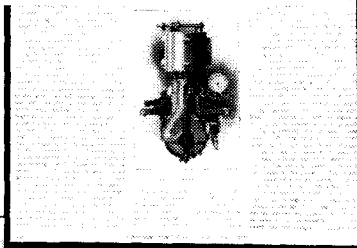
## Selected Articles from AMERICAN MACHINIST MAGAZINE January-June 1904

reprinted by Lindsay Publications

From out of the pages of American Machinist Magazine published during the first half of 1904 comes this collection of unusual and interesting articles.

You'll find articles on practical machining tricks for manufacturers of early automobile engines that you can still use. You'll get the inside scoop on one of the hottest new technologies - motion pictures. Search through the Ramapo Mountains in New Jersey and New York for ruins of early blast furnaces and rolling mills. Explore the problems of moving huge machine tools with horses, pouring babbitt into engine connecting rod forgings, and the intricacies of the engine that drove the White Steam car.

Most articles in the weekly editions of American Machinist have little value for most amateur and professional machinists today. What you get here are the very best illustrated articles that provide instruction, history, and insight into simpler technologies. You'll get lots of great reading from this reasonably priced collection. Order a copy! 8 1/2 x 11 paperback 47 pages  
Cat. no. 20188 \$6.95

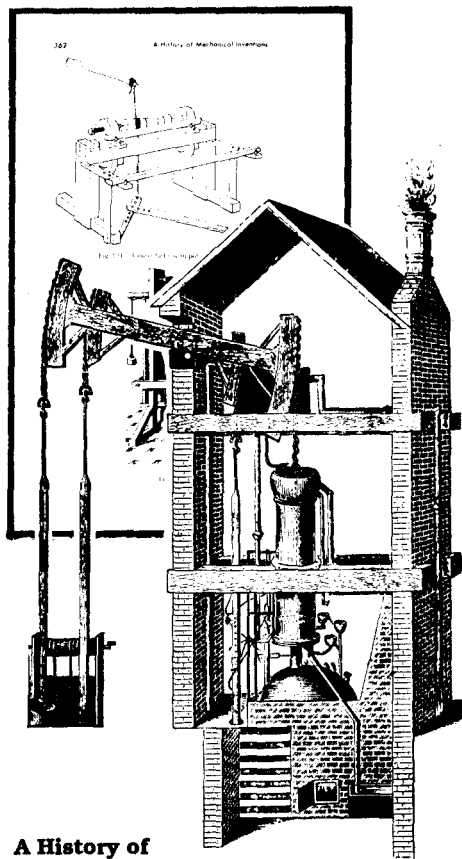


## CONTENTS

Making Piston Rings for Gas Engines  
A Test Indicator  
Light Weight Compressed Air  
Portable Forge  
Electric Drill  
Boring Bar for Taper Holes  
Points for Patternmakers  
Machining a Gas Engine Piston  
Automobile Construction IV (Babbitt)  
Machining Gas Engine Pistons  
Turning Box Pistons  
Robinson's Mill Experience with an  
Amateur Engine Fixer  
An Old Iron Furnace  
Moving Picture Machines  
Hunting Old Furnaces in the  
Ramapo Mountains  
Machining Half Bearings  
Special Chuck for Threaded Work  
Oil & Emery for a Slide Valve  
Getting a Fine Surface on  
Brass Castings  
How Machine Tools are Developed  
Counterboring and Facing in the Drill  
Press with a Circular Forming Tool  
A Backwoods Lathe  
Hunting Ramapo Furnaces in  
the 18th Century  
A Drilling Puzzle  
Trucking a Heavy Machine  
25 Years Ago  
Machining a Gas Engine Piston  
Lathe Spindle Design  
Melting Chips in the Cupola  
Gas Engine Design Constants  
and Formulas  
Ambler Drop Hammer  
Die for Perforating a Large Sheet  
A Two Ton Foundry Ladle  
An Old Pennsylvania Forge  
Wax Press  
Bench Lathe Cone Spindle &  
Box Fitting  
Compound Engine of the  
White Steam Car  
Testing a Lathe  
A New Planer Drive  
Obscure Cause of Failure of a Corliss  
Engine Governor to Regulate



# A History of Mechanical Inventions



## A History of MECHANICAL INVENTIONS by Abbott P Usher

Inventions have changed the way we live. I'm sure you already know that. But mechanical inventions have caused social change in ways that you're probably not even aware of. It's difficult for us to imagine life without electricity. Can you imagine life without even clocks?

Machines are interesting not only in themselves, but in the ways they affect people. This book reveals why machines were invented and the effect they had on society.

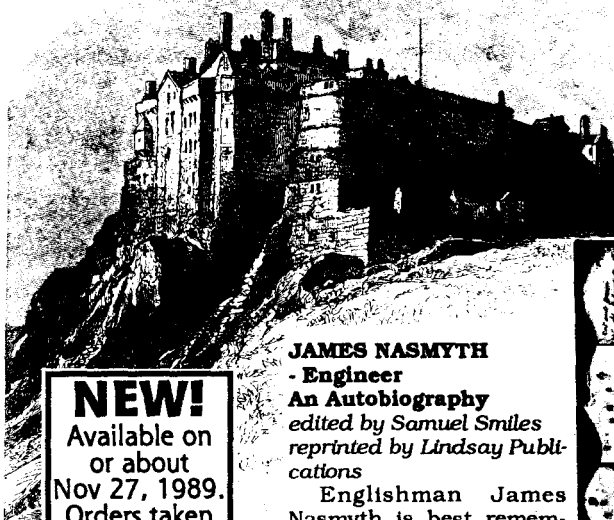
"The latter part of the book focuses on the production and control of power in general... We read thought-provoking accounts of the technology of textile manufacture from primitive times, of water wheels and windmills, water clocks and mechanical clocks, and the work of Leonardo da Vinci. The development of printing is carefully studied, not only for its intrinsic interest, but because of its importance for the history of science. Other topics include the production and application of power (1500-1830), machine tools and quantity production, the production and distribution of power since 1832..."

You get a well-illustrated and well-written history of science and invention. Consider it carefully. *American Scientist* commented, "The book is without peer in its field." Order a copy. 5 1/2 x 8 1/2 paperback 450 pages 159 illustrations  
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# James Nasmyth

Life story of remarkable British engineer who invented the steam hammer! Studied under Maudslay, knew Watt, and much more!



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**JAMES NASMYTH - Engineer**  
An Autobiography  
edited by Samuel Smiles  
reprinted by Lindsay Publications

Englishman James Nasmyth is best remembered as the man who invented the steam hammer,

but there is more to the man - much more. In his autobiography published in 1884 we find out just what an interesting life this man had!

Nasmyth starts out his tale with a humorous recounting of the having received the family name as a result of a brawl in a blacksmith shop sometime in the 1500's.

His father was a well-known artist and part-time engineer.

James Nasmyth was born in 1808, the tenth of eleven children, and he inherited his father's skills. James was only nine years old when James Watt, then 81 came to visit his father and discuss machinery and inventions. James experiment in his father's well-equipped machine shop and frequented local shops and foundries.

He recalls Johnnie Syme who took care of the old Boulton & Watt engine at a local shop and who taught James "processes in practical mechanism". Traveling with his father, James had opportunity to meet the great engineers of the day. By the time he was seventeen, James was casting and machining his own model steam engines.

In 1829, Nasmyth was apprenticed to Maudslay, "this greatest of mechanics" - the precision fanatic who perfected the screw cutting lathe. The story goes on and on about casting parts to make a 20x36 inch lathe, then a planer and then boring and drilling machines so that they could cash in on the exploding demand for railroad locomotives and machine tools.

He goes on to talk about inventing the steam hammer, travels in France, Italy, Germany, about steam pile drivers in Egypt and more. Nasmyth was an astronomy buff who built his own telescopes and explored the

moon. He talks about the 1851 Crystal Palace exhibition, making rifles, the new Bessemer steel conversion process, and on and on and on.

This is a classic book that everyone with an interest in the history of technology should have and read. Here's a man who was there, knew great machinists and engineers, and changed the world in which we live. You'll find the account easy and fun to read. And you'll discover dozens of woodcut illustrations that make the text especially enjoyable.

Get a copy! You'll really enjoy this. Expensive but it delivers. Recommended! Great book! 5 1/2 x 8 1/2 paperback 461 pages

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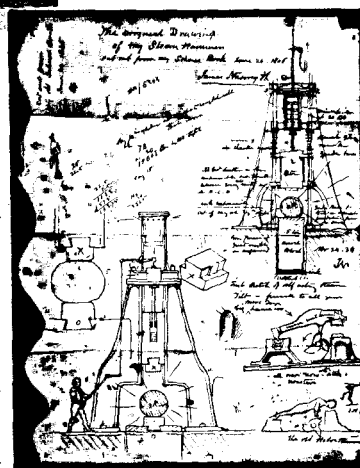
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Classic  
Autobiography  
from 1884  
back in Print!  
Great  
Reading!



FIRST DRAWING OF STEAM-ENGINE, NOVEMBER 24, 1809.



## Strange Century-old Machine Shop Talk!

"I have no doubt but that half of the difficulty with high-speed engines — so-called — comes from bad work on the connecting-rods."

"Can that be possible?" said Professor Rhombus. "I don't see the connection," he said; but he added, quickly, "I do not mean it in the sense of a jest. I do not think jokes are in good taste in this connection," he added, unconsciously, again.

"Well, Mr. Professor, it is just the easiest thing in the world for badly fitted-up connecting-rod to heat up a crank-pin. Now this little engine over here, that you saw the other day, is a case in point. If Jacob has not made an honest job of the rod, there will be trouble when it gets at work." (Jake shook his fist hastily at me behind the Professor.) "If the brasses stand a-cock-bill with the crank pin, they will bear only on one edge. What's the use of a bearing three inches nominal length with all the pressure on three-quarters of an inch? If the engine ran slow it would not be so bad, but it is liable to make trouble in any event. Then there is a relation of the two bearings to one another, the cross-head and the crankpin end. I wonder how many builders there who look them out of wind with each other?"

"How, 'out of wind' " asked the Professor.

"Why this way," said I, picking up a rod that lay on the bench, and putting two straight edges in the bores of the brasses; "now look across them and you will see whether the bores are in the same plane, or not....."



# Professor in the Machine Shop

## THE PROFESSOR IN THE MACHINE SHOP

by "Moulton"

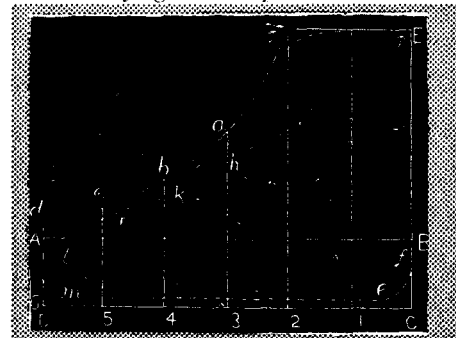
reprinted by Lindsay Publications

In 1886 a new apprentice in a machine shop had little education, and chances are the only additional education he would receive would be on-the-job training. As a result machinists a hundred years ago, knew little math, physics, strength of materials, machine design, or any theory for that matter. You can imagine their amazement when an educated man like the professor could walk into their shop and explain basic concepts they had wondered about all their lives.

Professor Rhombus wandered in the machine shop to learn more about the practical world, but the workers discovered he was a guy who could explain complex subjects in a simple way. They asked questions, and he delivered impromptu lectures.

You can sit in on the simple lectures he gave as to why bearings had to be a certain size, what latent heat is and why it's important (particularly for boilers and steam engines), how steam engine indicators work and what they tell you, and more.

A lot of the material pushes machinists of a century ago to take pride in their tools,



their work, their education, and to push for better ways to do their work.

Written by one of the machinists, the entire book is dialog between the professor and the men. You hear their conversations just as though you were standing there.

And the chapters are short and easy to read. The reason for this is simple. Machinists a hundred years ago could hardly read. If Professor Rhombus was to get his message across, he would have to make his book entertaining and fun to read. And he did just that.

You'll enjoy this. It's entertaining and educational. You'll probably learn something of value, and you'll probably be inspired to do better work. And most fun of all, you'll feel as though you're an apprentice in an 1886 machine shop.

This is a small book with an equally small price tag — something fun to read. Get a copy. You'll like it. 4x7 paperback 123 pages 4 illustrations

Cat. no. 20161

\$5.95

# Clutter's Last Stand

## CLUTTER'S LAST STAND

by Don Aslett

Do you live in fear that someone you respect may someday open one of your closets? Have you ever threatened bodily harm to anyone who opens a drawer in front of company? Do you wait until after dark to pull your car into the garage? Have you ever finally replaced a broken part — then kept that broken part? Do you live with someone who has too much junk?

Then this book is for you. And I must admit, me, too. The back cover continues:

Inside you'll find a JUNKEE EN-

TRANCE EXAM that helps you judge how bad your junk problem is; a list of "101 Feeble Excuses for Hanging on to Junk" that you can laugh at — and learn from; detailed guidelines for judging junk — both your own and others; hundreds of practical ideas for getting rid of clutter — and for storing what you really should keep. For all who have wage war on clutter and lost, here is inspiration to get the job done once and for all!

If you need to get organized like the rest of us, this book can help. 7x9 paperback 276 pages

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# Sixty Years With Men & Machine

by "Mr. Machinist", Fred H. Colvin

## 60 YEARS WITH MEN AND MACHINES

by Fred H. Colvin

Fred Colvin was 79 when he wrote this, his final book. He figured by that time in 1947 he had written over 7 million words for publication both in *American Machinist* magazine and in his own books. If you collect machine shop books of any quality, the names Colvin and Stanley are as well known to you as the names of your own children.

Colvin started his machine shop apprenticeship in July 1883 and ended up as editor of *American Machinist* magazine owned totally at one time by John Hill. Later on, Hill teamed up with James McGraw to form McGraw-Hill, one of the country's top technical publishers of this day.

Chapters include *The Machine That Can Reproduce Itself*, *In the Beginning Was the Belt Drive*, *Giving the Machine a Voice*, *A Society Sponsors the Machine*, *High-wheelers and High Iron*, *Natural History of the Automobile*, *I Join the American Machinist*, *From Maxim to the Jet Plane*, *Machine Tools and the First World War*, *Tour of the World in Eighty Days*, *Machine Tools and Global Warfare*, and finally, *Past, Present and Future*.

Like *Engineering Reminiscences* by Charles Porter and *Tool Builders* by Roe, you'll find this volume to be filled with personal memories of famous men and incredible machines and how they created the world we know today — from the Columbian Exposition of 1893 to the jet fighters of World War II. You'll find photos of Starrett, Hartness, and other greats, locomotives, machine tools, the Wright brother's engine, the Maxim machine gun and much, much more.

This is like sitting on your great grandfather's knee and having him give you a detailed account of machines and his love af-



Cat. no. 4864

fair with them. It's plain fun reading. You must have a copy of this if you treasure the history of science and technology as so many of us do. You'll like it. Be sure you get a copy. Read it and re-read it. 5 1/2 x 8 1/2 paper-back 297 pages

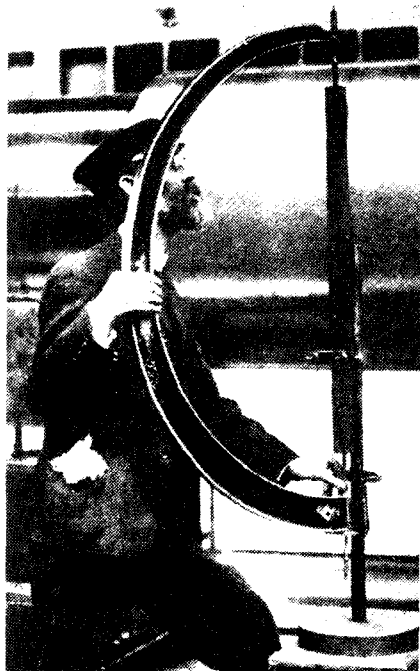
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## These men obviously loved their work!

Dear Lindsay,

I have purchased quite a number of books from your company since discovering it approximately three years ago. In all cases I was very pleased with the items bought but until now have not felt the need to write to you and express how I felt about these wonderful books. My latest order consisted of seven books three softbound and the remaining in hardcover. The two that have caused me to write are "The Professor in the Machine Shop" and "60 Years with Men and Machines". Even with all the reading I do, I have a difficult time finding the appropriate words to describe the joy I found in reading these books.

To begin with both authors write in a similar style, very down to earth and full of life. These men obviously loved

their work and cared a great deal about their fellow craftsmen. In each book I found that the fundamental technical information was still sound even in today's high-tech situations. But most important to me, a mechanical engineer, was the immense pride they has in their work and profession, and the deep respect bestowed on their co-workers and all people in general. These pieces are not just interesting curiosities, but definitive studies of the social, philosophical, and technical atmospheres of a bygone era.

I sincerely hope you continue to offer books of this type and of the same caliber and quality. Your hardcover books are from a collectors point of view, welcome additions to my library....

So keep up the good work.

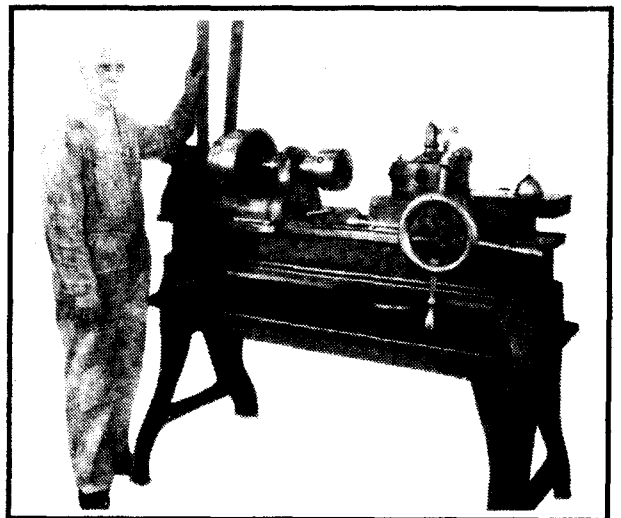
Thanks, D M Mancini

## Fred Colvin delivers with unmatched wit!

Just finished reading "60 years with Men and Machines" and I feel the price for the hardbound edition is justified. This is certainly one addition to my library which will be read again and again. Fred Colvin delivers with unmatched wit a funny and interesting history of machine

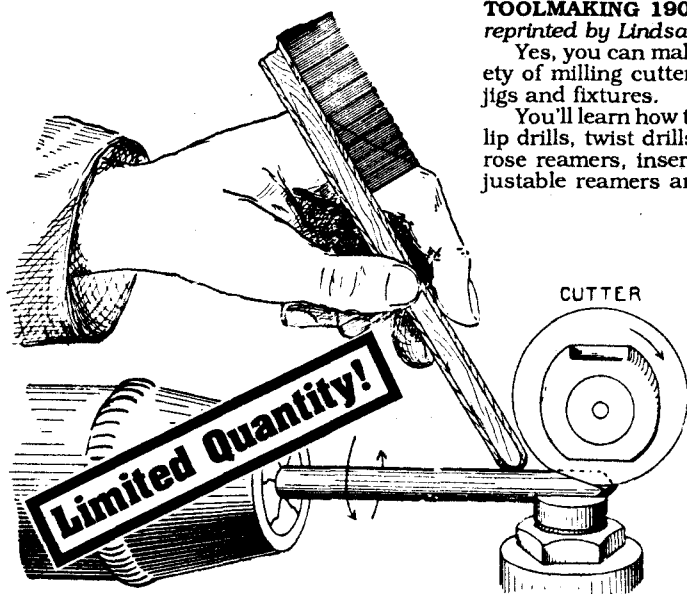
tools and his life among them. I would strongly recommend this book to everyone who works and/or uses machine tools for it certainly makes me appreciate the advancement of the last 100 years.

Darren T McQuaid  
Champaign IL



# TOOLMAKING 1905

## Visit an 1885 Machine Shop!



### TOOLMAKING 1905

reprinted by Lindsay Publications

Yes, you can make drill bits, a wide variety of milling cutters, taps, dies, reamers, jigs and fixtures.

You'll learn how to make flat drills, single lip drills, twist drills, fluted hand reamers, rose reamers, inserted blade reamers, adjustable reamers and more. You'll get full details on annealing, hardening and tempering. You'll learn how to make expanding mandrels, eccentric arbors, bottom taps, square thread taps, inserted blade taps and more. You can make square and round thread cutting dies, counter bores, hollow milling cutters, cutters with interlocking teeth, spiral end mills, T-slot cutters, face milling cutters

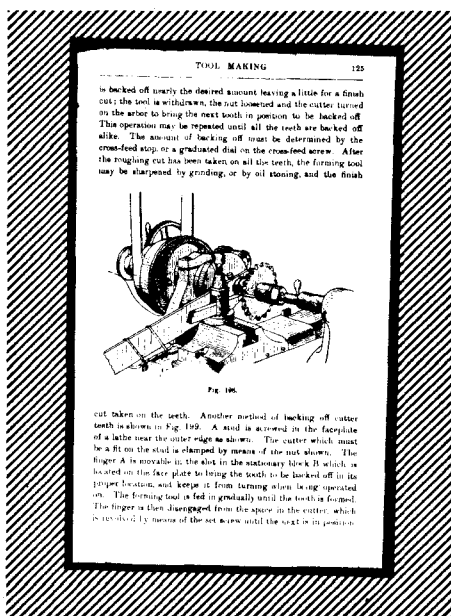
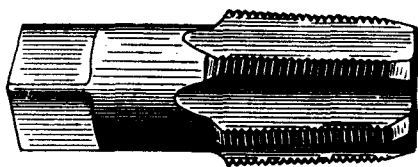
and much more.

To make these tools you'll need a lathe and probably a milling machine, and in some cases, a tool grinder. I won't guarantee that the tools you make are the best or as good as today's, but they performed very well in 1905, producing precision work. No doubt, properly made and used, they'll give you excellent performance as well.

Great instructions. Great ideas. Combine the ideas in this book with your own, and invent your own tools! Toolmaking separates the men from the boys, the hackers from the craftsmen. With this book you can be a craftsman. Order a copy today! 5 1/2 x 8 1/2 paperback 208 pages heavily illustrated

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## Great Mechanics are Creative!

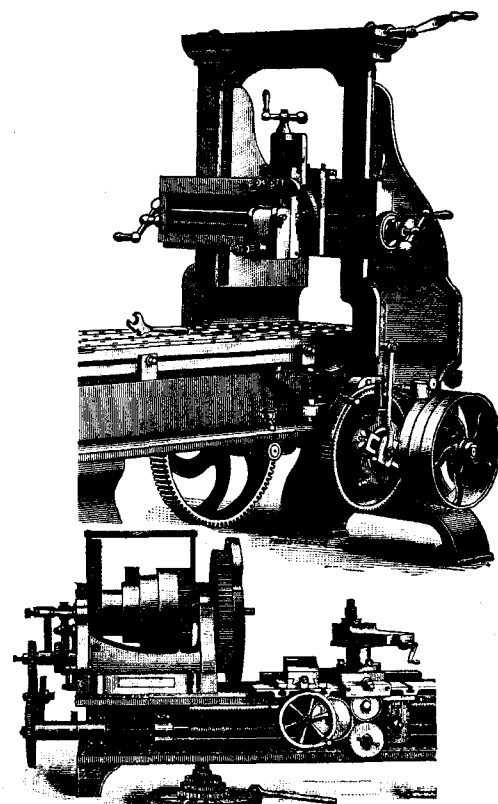
Great mechanics are creative. Any average mechanic can turn out decent work by simply following the same procedures and techniques that have always been used. But the top-notch mechanics dig deep into their memories, pull out bits and pieces of knowledge, some tried, some untried, rearrange them into new patterns and develop new and better methods. In other words they take raw ideas and information and use it to create both machines and construction techniques that didn't exist before.

Many of the reprints in this catalog are useful just as they are. They'll show you how to build something useful using simpler technology. But don't over-

look the fact that they provide raw material for the creative person.

Every book is loaded with ideas. An idea in *Toolmaking* may have an application two years from now in some way that has nothing to do with tools. Most of the books you see in this catalog are valuable because they provide raw material that can be fed into the creative process. These old books may be fun to read, by they really are food for the mind.

When you read this catalog and the books you order from it, use your imagination. What you read should create dozens of new ideas — more ideas than you'll ever have time to pursue. A person with imagination and creativity will always find life exciting.



## ILLUSTRATED MACHINE TOOLS OF 1885

reprinted by Lindsay Publications

Take a tour of a well-equipped machine shop of 1880. See the finest lathes, planers, milling machines, boring machines, gear and bolt cutters available. Marvel at the simple, low-cost machines that turned out work as precise as many of today's machines.

You'll enjoy this reprint of a report issued by the government in 1885 on the 1880 Census. You get over 200 high quality, highly detailed wood engravings of early machine shop machinery some of it designed for special work such as boring and facing locomotive cylinders and turning wheels.

See double faceplate lathes, vertical lathes, compound rests, back gearings, chucks and much, much more.

A century ago the technology of printing photographs was yet to be perfected. It is unusual to find any quality picture book published in 1880. It is even more unusual to discover a picture book on machine tools like this. Wall to wall pictures. Rare information. Fascinating details. You'll really like this. Order a copy today! 8 1/2 x 11 paperback 123 pages

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# BOY MECHANIC

## THE BOY MECHANIC

### — Book 1

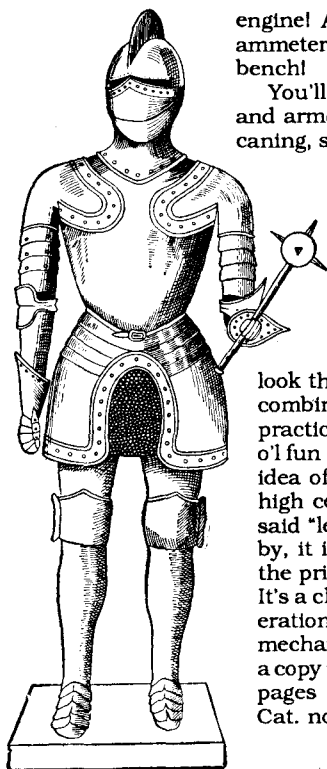
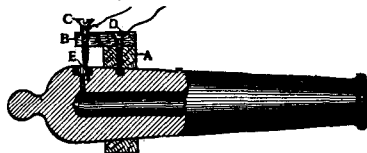
compiled by

H. H. Windsor

"700 Things for Boys to Do. How to construct wireless outfits, boats, camp equipment, aerial gliders, kites, self-propelled vehicles, engines, motors, electrical apparatus, cameras and hundreds of other things which delight every boy."

You may have thumbed through a copy of Boy Mechanic when you were a kid and dreamed of building just a few of the fantastic projects shown. You probably don't remember this volume. There have been a number of different volumes published over the years, and this is the first from 1913.

You get wall-to-wall projects that in most cases are not too detailed, but are more than enough to whet the appetite and make you want to get started. With a little imagination and a little skill (often times more than



engine! An electric postcard projector! An ammeter! A paper hot air balloon! A work-

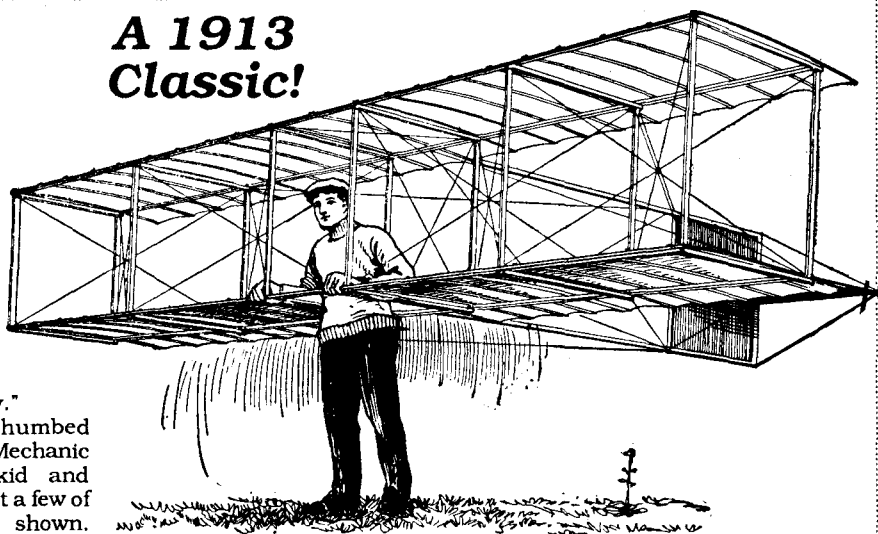
bench! You'll find information on imitation arms and armor, magic tricks of all kinds, chair caning, sundials, homemade phonographs, gymnasium equipment, an ice yacht, a pipe fitting lathe, a paper boat, a cross bow, an electric motor, glass blowing and much, much more.

Many people have asked us to reprint the Boy Mechanic. One look through it, and you'll see why. It's a combination of practical projects, not-so-practical projects, crazy ideas, and plain old fun nostalgia. We've kicked around the idea of reprinting this for years, but the high cost always stopped us. Now we've said "let's take a chance. As the years go by, it isn't going to get any cheaper". So the price is a little higher than we'd like. It's a classic book well worth your consideration. If you remember any of the boy mechanic editions, you'll want this. Order a copy today! 5 1/2 x 8 1/2 paperback 469 pages

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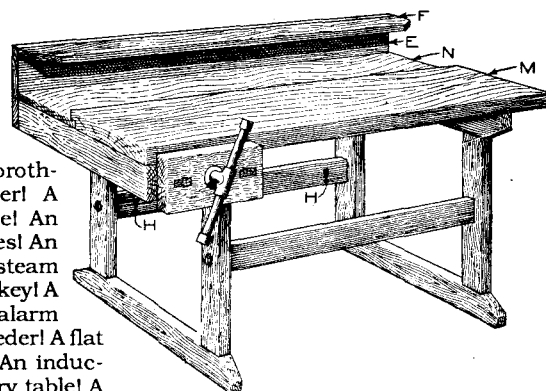
## A 1913 Classic!



a boy could muster) you can create some of the darnest contraptions you've ever seen!

Build a Wright-brothers style handglider! A Wimshurst machine! An arc light! Snow shoes! An electric stove! A toy steam engine! A telegraph key! A water rheostat! An alarm

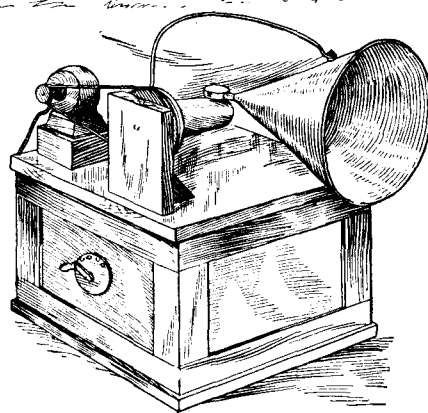
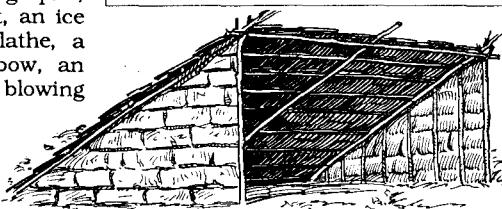
clock chicken feeder! A flat bottomed boat! An induction coil! A library table! A machine to put paraffin on wire! A pipe fitting steam



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# A Great 1892 Collection of Hints & Tips for Mechanics, Machinists and others!

# Ways & Means

**WAYS AND MEANS**

by A. H. Cleaves

reprinted by Lindsay Publications

The full original title is "Ways and means for machinists, metal-workers, model makers, watch and tool makers, jewelers, draughtsmen, etc. being a collection of hints and helps not found in books usually written for this class of artisans."

You'll find this small 1892 book packed with ideas and practical how-to on a variety of subjects. Chapters include hardening and tempering small work, a cheap hardening and annealing furnace, hardening and annealing, mechanical appliances and method of various kinds, the modern bench lathe, chucks of different kinds, slide rests and bench lathe tools, a variety of ways and means, a variety of matter, and universal formula for gearing up any lathe to cut any thread.

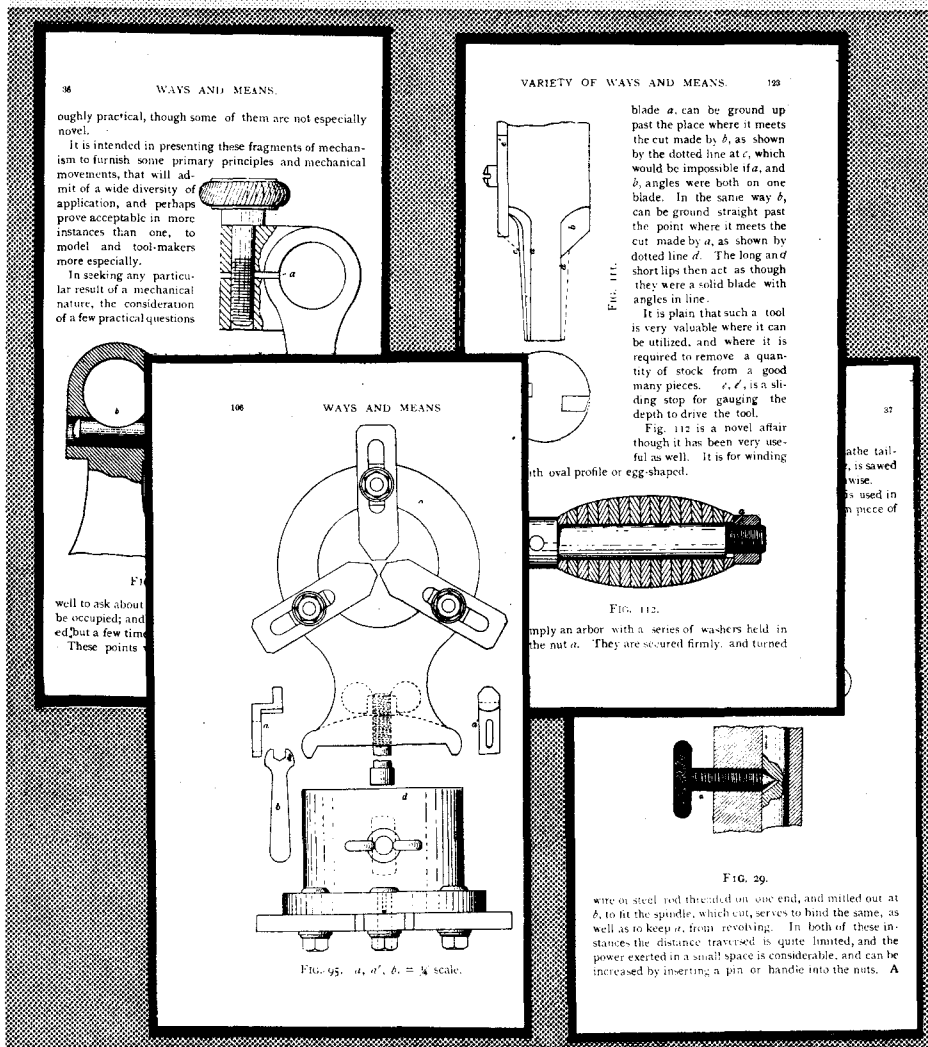
Within each chapter are brief instructions usually with illustrations for hardening small drills, making emery wheels, a yoke clamp, a delicate follower and a hundred other things. You'll learn about the Whitcomb lathe, the Ballou lathe, a watch lathe, lining up work on a planer, construction of planer fixtures, straightening work sprung in hardening, making a balance chuck, a V chuck, a ball turning tool, step chucks, construction of hardened chucks, and much more. Make a smoothing tool for a planer, a home made try square, a gas generator, and more.

You'll find that the descriptions are not extremely detailed and that drawings are not dimensioned. In other words, you're supposed to know a little something about building equipment before you tackle these projects. This is an idea book as much as it is how-to. Like the title says it is written for artisans.

An interesting book. Lot's of interesting bits and pieces, odds & ends, sure to fire up your imagination. A fun book. Order a copy. You'll like it. 5 1/2 x 8 1/2 paperback 158 pages

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\$7.95



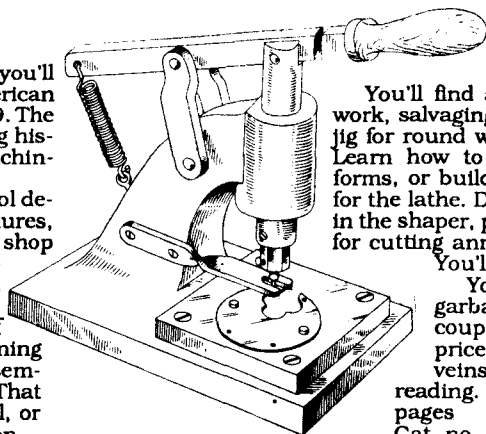
# Shop and Plant Shortcuts...

## SHOP AND PLANT SHORTCUTS from American Machinist Magazine

If you're into machines and machine tools, you'll like this collection of articles reprinted from American Machinist magazine originally published in 1929. The hints and kinks are old enough to be interesting historically, but new enough to be valuable for machinists today.

Eleven chapters include automotive work, tool design kinks, drill and tapping, jigs and fixtures, punches and dies, milling and grinding, railroad shop work, special tools and holders, tool room suggestions, welding, forging and heat treating, and other hints.

You'll probably never need to grind the end of a railroad car spring, but you'll see tricks on turning piston rings, heating aluminum pistons for assembly, and reaming valve guides in engine blocks. That kind of info could be adapted to building model, or even full sized engines, perhaps even restoration.



You'll find all kinds of ideas for clamping unusual work, salvaging taper-shank twist drills, building a drill jig for round work or a hand-operated bending fixture. Learn how to design punches, make aluminum coil forms, or build an improvised cam-cutting attachment for the lathe. Discover some useful tips on cutting gears in the shaper, plans for an inside countersink, and a tool for cutting annular grooves. And that just for starters. You'll find hundreds more.

You'll probably think a lot of the hints are garbage. But you'll also find some gems. Just a couple of good ideas make this book worth its price. For those of us with 90 weight in our veins, practicality doesn't count. For us it's fun

reading. Get a copy. 5 1/2 x 8 1/2 paperback 251 pages

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# Get Clean & Smell Good Too!



## POTPOURRI COLOGNE & SOAPS

### 102 Natural Recipes

by David A Webb

Try something different. If you do nothing else, at least make some soap that not only gets you clean, but some that makes you smell better, too! Discussed in detail are

- easy ways to dry flowers for winter bouquets and potpourris
- common and botanical names of plants used
- potpourris including recipes that use familiar English standard measurements and readily available ingredients
- sachets including recipes, choice of cloths, and suggested uses
- soaps from essential ingredients to safety precautions
- candles including tips on making decorative scented candles
- room fresheners and deodorants
- perfumes and colognes including personalized fragrances
- containers, dishes and other packaging
- sources of supply

You can make these interesting products for your own use or for resale. The book covers a lot of ground and is guaranteed to give you plenty of ideas. Consider it. 7x9 paperback 165 pages

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# SHOP METHODS

## STANDARD AND EMERGENCY

### SHOP METHODS

by Colvin & Stanley

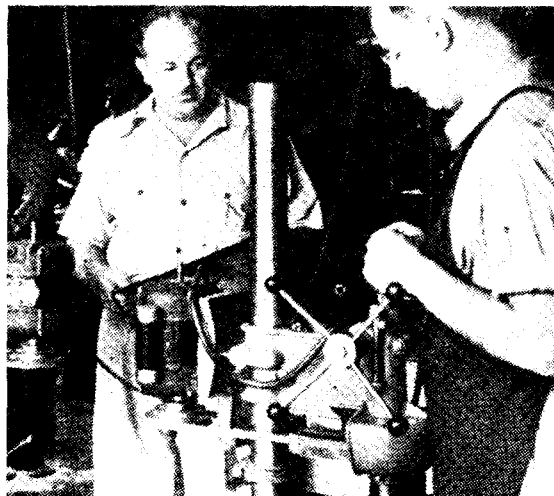
"Some years ago a well-known engineer who was not a shopman, asked the authors for a book that would give him a general idea of machine-shop operations and of the machines used. Since then others have expressed the same desire. This volume is intended to supply such information as will meet these and similar requests.

"It begins with an outline of the various operations that machine shops are asked to and shows the machines on which such work is usually performed....

"The authors show how many of these operations can be, and have been, performed by entirely different methods largely to meet the [World War II] emergency. These examples show how experienced mechanics can adapt machines intended for quite different operations to do work normally performed on other machine tools. In some cases these emergency methods have proved more efficient than those formerly considered as standard..."

That's how the authors explain their book in the preface.

Chapters include standard machine tools, standard methods and machines, making holes, boring machines and boring mills, lathe work, milling practice, planing, slotting, shaping and machine forging, and grinding operations.

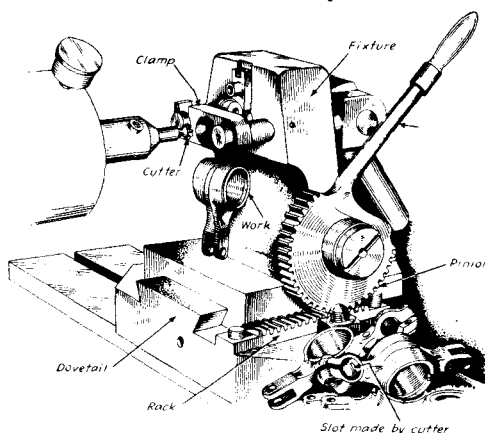


As you probably know, Colvin and Stanley became household (or at least shop-hold) names among machinists. This duo became more famous than Batman and Robin, and the lessons they taught got more machinists out of more jams than the Dynamic Duo ever did! (Be sure to examine Colvin's memoirs elsewhere in this catalog.)

Since this is an industrial book, the size of the machines can be incredible. I doubt that you'll need to machine an 18 foot

propellor, but the lessons you learn could certainly be adapted to a much smaller work piece.

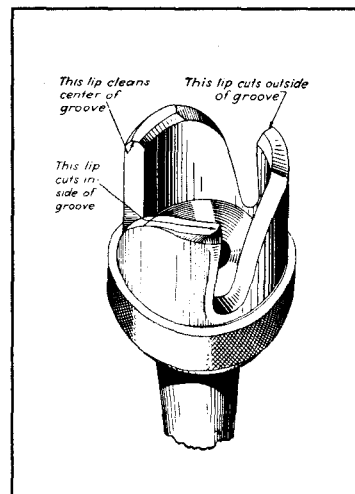
You'll see everything from a specially made boring cutter used to do heavy boring in a turret lathe to special fly cutters made for use in a straddle mill. Watch as trigger housings on Army rifles are broached. You'll see a special grinder setup to keep mill-



ing teeth sharp.

Some of this stuff is interesting reading but of little value in the home shop. On the other hand, you'll get lots of good ideas on how to perform complex machining operations on machines you never thought could do the job. Some of these ideas may save you money through improvisation.

This is a good book from 1945. Lots of ideas. Lots of garbage, but even the garbage is interesting reading! All in all, a good book for the machine shop freak. Get yourself a copy. 5 1/2 x 8 1/2 paperback 333 pages. Cat. no. 4856 \$14.95



# Fascinating Memories of a Steam Engine Genius!

## ENGINEERING REMINISCENCES

by Charles T. Porter  
reprinted by Lindsay Publications Inc

Who was Charles T. Porter? — one of the most talented self-taught engineers who ever lived. And yet very few people have heard of him.

In the earliest years of this century, Porter wrote articles for "Power" and "American Machinist" magazines recalling his years of developing a superior steam governor, the invention of the high-speed engine, steam indicator, and much more. All of the readers of those magazines knew and respected Porter, and his reminiscences were read with delight.

When the series of articles ended in 1908, they were compiled into a book of which only a small number were printed. Today the book is exceptionally rare.

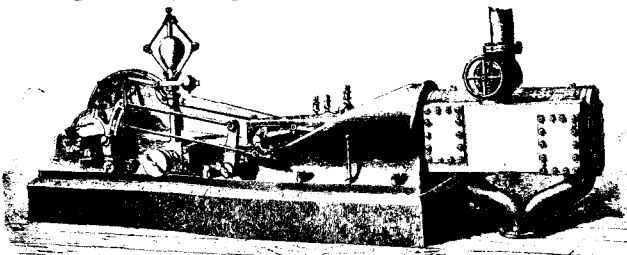
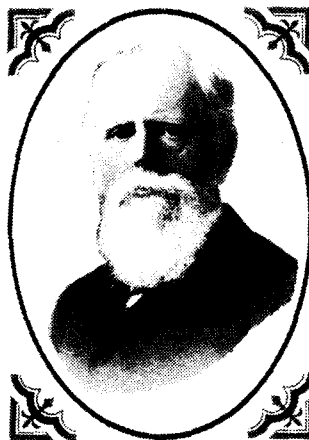
Before Porter got hold of them, steam engines rarely turned more than 60 rpm. If they did, they rattled, shook, lost power, exploded and who-knows-what. After Porter finished with them, they were running smoothly and powerfully at several thousand rpm. Porter and his partner Allen even built the engines commercially for many years.

What is so great about this book is that it's almost like talking to "the ol' man" himself. His articles read smoothly and interestingly. For instance, you'll be amused at the political problems he often encountered in getting his engines exhibited because people were afraid of them! You'll find this flat out enjoyable reading.

Twenty-eight chapters cover such topics as: evolution and manufacture of the central counterpoise governor, engineering conditions in 1860, I meet Mr. Allen, Mr. Allen's inventions, analysis of the Allen Link, planning my London exhibition engine design, conditions I found there, remarkable sale of the engine, designs of horizontal bed engines, engine for the Oporto (Portugal) exhibition, trouble with the Evan Leigh Engine, experience in the Withworth works, the steam fire engine in England, return to American, my shop, the Colt Armory engine, boilers tests in exhibition of 1871, production of an original surface plate, experience as member of board of judges at the Philadelphia Centennial exhibition (1876) and much, more more.

You also get many photographs of the important inventors and machinists of the era along with diagrams and drawings of engines and their components.

The John Fritz medal is awarded annu-



ally for "Scientific or Industrial Achievement in any field of real or applied Science". I supposed you could loosely interpret that to be the Nobel Prize for inventing. In the years 1905 through 1908 the recipients were Lord Kelvin, George Westinghouse, Alexander Graham Bell, Thomas A. Edison, and in 1909 Charles T. Porter. It should be evident the Porter was exceptionally prominent as a steam engineer — so much so that he was one of the judges at the 1876 Philadelphia Centennial Exposition which had one of the most incredible displays of machinery ever assembled.

Reciprocating steam engines are gone from everyday life. So it's no wonder that no one knows Porter. Only three high-speed Porter-Allen engines are known to exist, one being at the Smithsonian.

So here's a book that is not only awfully fun to read, but is historically important as well. Loaded with interesting commentary and first hand accounts from a man who knew all the big names in industry. Get a copy. Well worth having. You'll like it. 5 1/2 x 8 1/2 paperback about 400 pages.

Cat. No. 4350 \$14.95

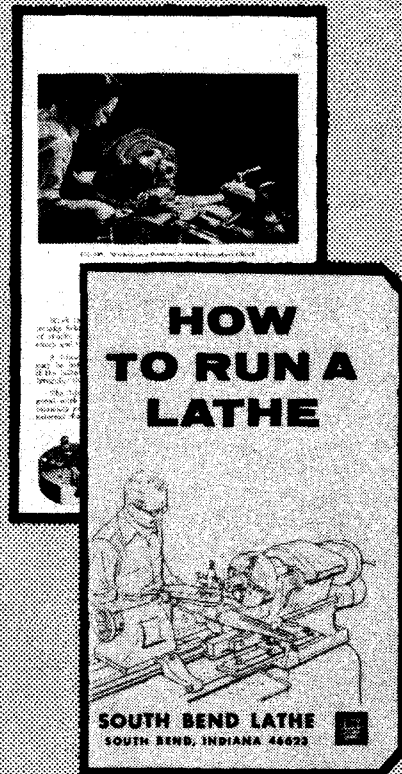
### One of the best—

From Kansas City, Walt D., writes:

"I just finished 335 pages of 'Engineering Reminiscences' by Charles T. Porter. This was one of the most interesting books I have ever read. Anyone interested in steam engines of shop work of any kind should read this book. I consider it a rare bargain in books as well as a rare work. Porter's experiences from lawyer to steam engine builder and inventor, his problems with people, his failure and successes, are all written by himself in a most engaging manner. Of the almost \$400 worth of books I have bought from you, I consider this book to be one of the best. Your statement on the back cover, 'Porter was to steam engines what Edison was to the electric light. He didn't invent them, but he did perfect them' is right on. I knew next to nothing about steam engines before reading Porter's book. Now I at least have an interest and desire to know more about them and their workings . . ."

Walt's letter turned up in the mail one day, totally unexpected. My response in so many words was "I told you so". Get a copy and see for yourself.

# How to Run a Lathe!



## HOW TO RUN A LATHE

by South Bend Lathe Inc

Although the company greatly increased the price of this classic reference a few years ago, you'll find "Run a Lathe" is still a good buy. It has been in print since at least 1907, with this edition carrying a 1966 copyright.

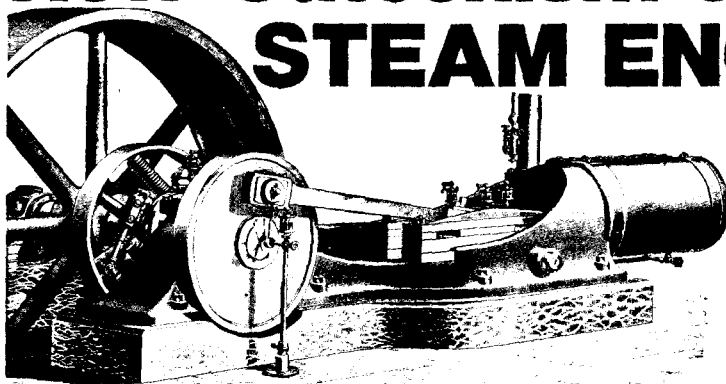
You'll learn about selecting a lathe, installing and leveling it. You'll get a complete education in selecting and grinding cutting tools, making precision measurements, turning between centers, checking tailstock offset, using chucks and collets, turning tapers and boring. You'll be shown how to drill and ream, and cut right and left threads of all types: acme, national coarse, double square, Whitworth and more. Use of the knurling tool, the steady rest, the face plate, mandrels and milling cutters are covered. There are many tables covering everything from cutting speed and thread conversion tables to Morse taper specs.

I have a greasy, bent up copy next to my lathe. It's a valuable reference and is loaded with excellent illustrations. It's definitely worth having. 5 1/2 x 8 1/2 booklet 128 pages

Cat. no. 10 \$5.95



# New Catechism of the STEAM ENGINE



## New Catechism of THE STEAM ENGINE

by N. Hawkins, M.E.

reprinted by Lindsay Publications Inc

If there is one volume that could be called a turn-of-the-century bible on steam power, this is it. I've reprinted it at the suggestion of a number of people. And it's really great.

You'll find page after page of illustrations, usually great old engravings, and detailed technical description on every conceivable steam power device from Corliss, McIntosh & Seymour, and Porter-Allen engines, to Conover independent jet condensers, steam road rollers, Baldwin Locomotives, and steam fire engines.

There are additional chapters on gas, oil and hot air engines. You'll see engravings and cutaway drawings of the Otto gas engine, the Simplex naphtha engine, the de LaMater-Ericsson hot-air pumping engine, deLaMater-Ryder hot air engine, and others.

You'll see everything from hoisting engines to air and refrigeration compressors.

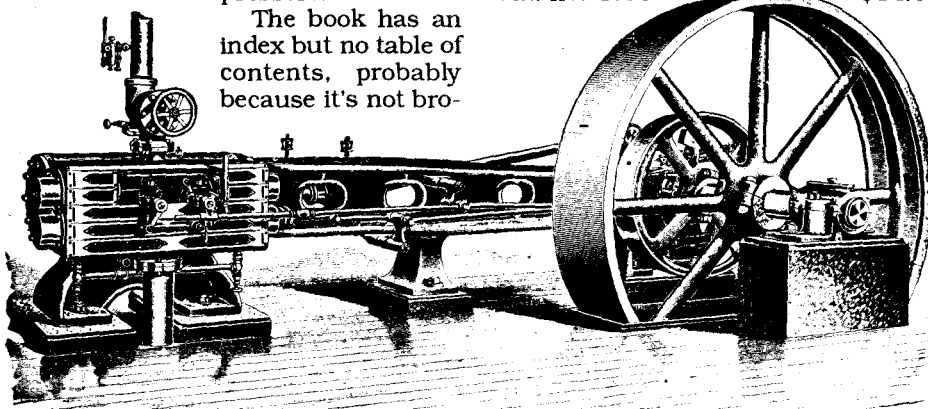
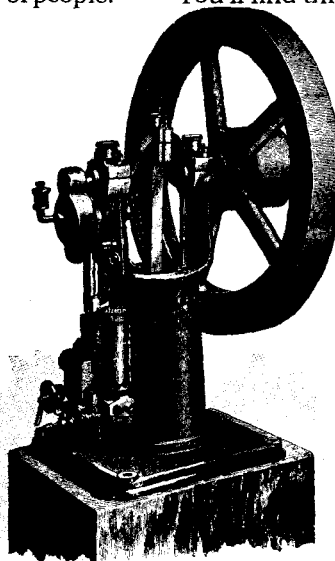
The book has an index but no table of contents, probably because it's not bro-

## Classic 1904 Handbook back in print!

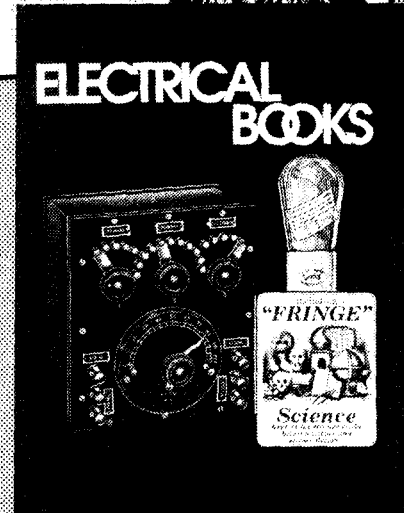
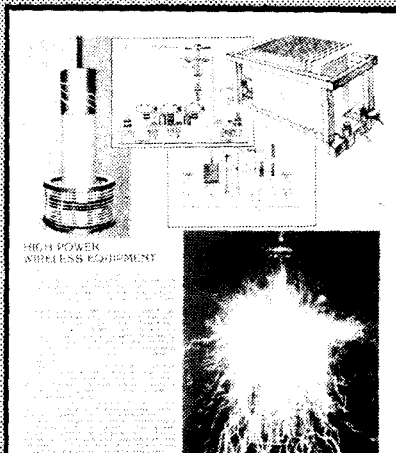
ken into chapters, but is rather one master collection of steam machinery information.

You'll find this 1904 comprehensive reference to be top rate. Original volumes are not easy to find especially in good condition. You can have your own personal copy for much less than the cost of an original. If you are the least bit interested in steam power, you should have a copy of this. Any knowledgeable enthusiast will instantly recognize the engines and the companies that produced them, most having disappeared decades ago.

Get a copy. You'll enjoy it. Wall to wall illustrations. A fun book to read and a great reference to have in your technical library. Order one today. 5 1/2 x 8 1/2 paperback 437 pages Cat. no. 4619 \$14.95



# ELECTRICAL CATALOG!



Lindsay's Electrical Books Catalog features great books on motor construction and rebuilding, Tesla coils, induction coils, lightning generators, shortwave radio, antique radios, old time radio circuits, crystal sets, transistor projects, printed circuits, alternator secrets, three-phase motor conversions, electricity and electronics textbooks, and much more.

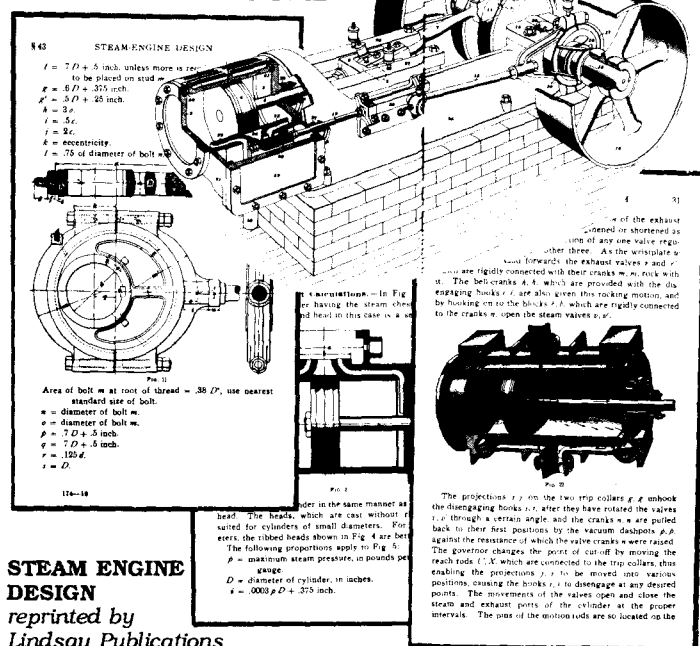
You'll also find "FRINGE SCIENCE" books covering topics that lie somewhere between science and fantasy. Explore Tesla's lost inventions, magnetism, the secret shortwave spectrum, perpetual motion, the strange happenings reported by Charles Fort, free energy receivers, strange inventions, and more!

You'll find page after page of fascinating, high quality books at reasonable prices — many books available nowhere else!

If you're not already receiving the Electrical catalog, you can get your first copy for only \$1.00 postpaid.

It is definitely worth seeing.

# STEAM ENGINE DESIGN



## STEAM ENGINE DESIGN

reprinted by  
Lindsay Publications

You can build simple steam engines from castings or stock material, make them run, and have a lot of fun. But just because your engine runs does not mean that it is a quality engine. One lung gas engines built in 1900 ran very well, but they were dogs compared to the engines of today. Most of today's small amateur built steam engines are probably dogs compared to a well designed, finely tuned steam engine of a hundred years ago.

What I'm trying to tell you is that steam engines are very sophisticated if you want reliability, power AND efficiency. In this book you will learn how to design one of those sophisticated engines from an 1896 engineer.

In the first section you'll learn the basics: all the components, how they fit together, and how they work.

Then you'll learn about the choices and tradeoffs that must be made concerning expansion, valving, boiler pressure, piston speeds and more. Then you start plugging numbers into the formulas to come up with back pressure and point of exhaust closure for simple engines, engines with single swinging eccentrics. Walk through calculations for simple non-condensing engines, high speed auto-

matic cutoff engines, hoisting and locomotive engines, and multiple-expansion engines.

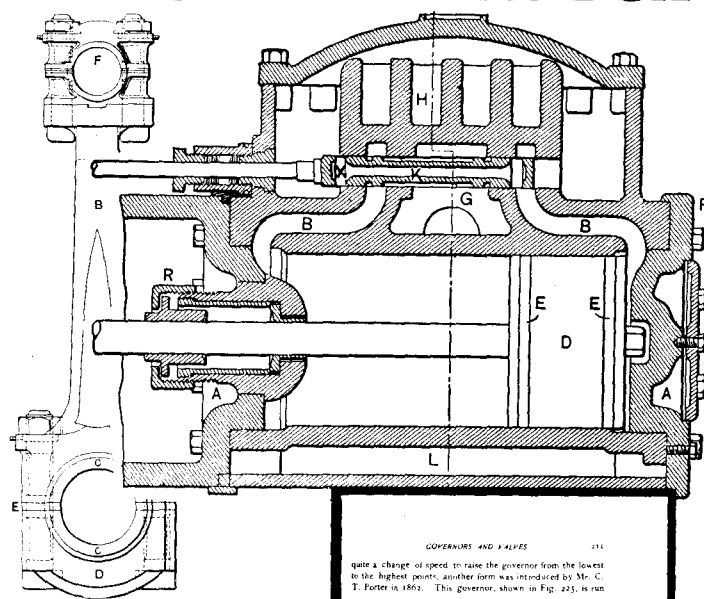
Calculate in detail the proportions of the cylinders, steam ports and passages, dimensions of the steam chest, Corliss engine cylinder proportions, diameter of the drive shaft, size of the journals, crankpins crankshaft counterbalances, and on and on.

The last section will show you how to design crossheads for a variety of engines, eccentric rods, stuffing boxes, flywheels, sample proportions for existing successful engines and more. There's so much nitty-gritty detail here, that it will take you days and weeks to work the design out on your calculator, think about it, revise it, and build it.

Don't expect to become an expert engine designer just by reading this book. But you will learn secrets and techniques that haven't been taught in almost a century. Other books will show you ready-made designs, but this book will let you custom build sophisticated engines.

This is a great book on an unusual subject! A *MUST* book for steam buffs, mechanics and historians. Reasonably priced. Order a copy. 5 1/2 x 8 1/2 paperback 192 pages Cat. no. 4104 \$9.95

# STEAM ENGINEERING!



## ELEMENTS OF STEAM ENGINEERING

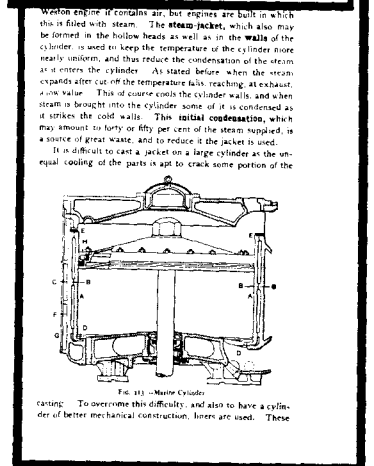
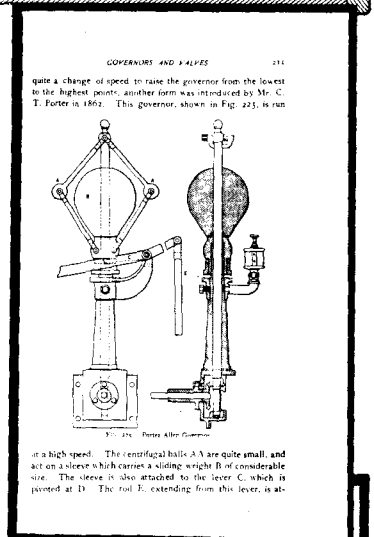
by Spangler, Greene & Marshall  
reprinted by Lindsay Publications

Let this time machine put you into a 1905 engineering school course on steam power. Learn about boilers, boiler details and accessories, boiler-room auxiliaries, slide valve steam engines, engine details, valve motions and diagrams, indicating and governing, governors and valves, and condenser and multiple-expansion engines.

You'll see Vanderbilt fireboxes, feed check valves, a Reliance water column, a Warren Duplex pump, a 6x8 engine cylinder, sectional packing rings, a Porter-Allen connecting rod and hundreds of other pieces of equipment.

You'll cover the whole topic of steam power from start to finish. Although there is a some discussion on railroad locomotives, almost all of the material is on stationary steam power. Excellent book. Heavily illustrated. Pictures on almost every page! Easy and fun to read. Get a copy! 5 1/2 x 8 1/2 paperback 336 pages Cat. no. 4147

\$11.95



# Handbook of Corliss Steam Engines

## HANDBOOK OF CORLISS STEAM ENGINES

by F. W. Shillitto Jr  
reprinted by  
Lindsay Publications

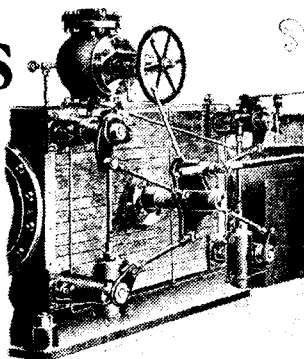
The full title is actually "Handbook of Corliss Steam Engines describing in a comprehensive manner the erection of engines, the adjustment of the Corliss valve gear, and the care and management of Corliss steam engines."

As you probably already know, it was George Corliss who discarded the simple slide valve and replaced it with four cylindrical valves, and in doing so made the steam engine much more economical. (It was Charles Porter that introduced precision machining that enabled high engine speeds and gave engines much higher power-to-weight ratios.)

After the Corliss patents expired, everybody and his brother was building Corliss engines since they were probably the most desirable stationary engine in production.

Had you hired into the powerhouse of a factory, you would have needed this 1902 book to keep the engine running at top efficiency.

In part one you learn how to assemble the engine parts as they arrive from the engine factory. Chapters include preparing foundations; reference lines for locating; templates; foundations; placing main parts in position; lining and leveling; and assembling



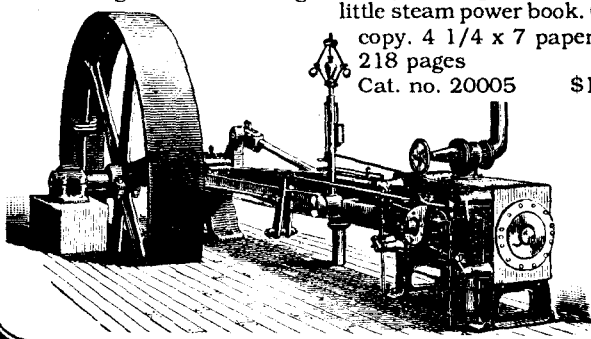
the moving parts.

To get the most power for each ton of coal consumed, it was important that you adjusted the valves correctly, and part II will show you how. Chapters include the valves; valve gears; squaring the valves; dash pot rods; eccentric rod, rocker arm and reach rod; centering the engine; setting the eccentric; adjusting the governor; indicator diagrams; a few pointers; and double ported valve and long range cut-off.

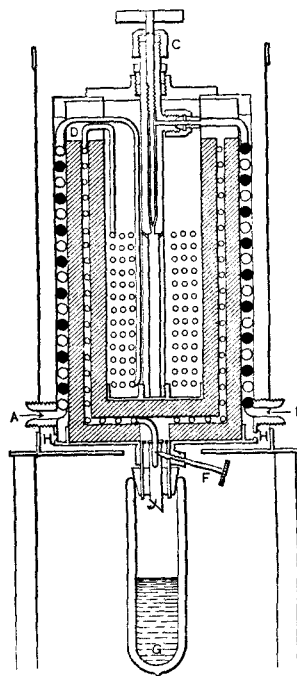
Next come tables and memoranda. Then you get very short chapters with illustrations on various engines: Reynolds-Corliss, Harris-Corliss, Philadelphia-Corliss, Eclipse-Corliss, Fife & Stowell Corliss, Columbian-Corliss, Geo H. Corliss, Sioux-Corliss, Bates-Corliss, Watts-Campbell Corliss, and the Fishkill-Corliss.

So there you have it. In this classic book you get pictures and details on a variety of Corliss engines, as well as instructions for their operation. This is a must for Corliss owners, model builders, steam power buffs, and technological history buffs. Interesting reading. And excellent little steam power book. Get a

copy. 4 1/4 x 7 paperback  
218 pages  
Cat. no. 20005 \$11.95



# LIQUID AIR



## LIQUID AIR

by T. O'Connor Sloane  
reprinted by  
Lindsay Publications Inc

Think about it. You can feel wind on your face, but you can't see the gases creating the sensation. You walk through a invisible world of gas. Yet if you push this "stuff" you breathe through cleverly designed machines, you can turn it into an extremely cold liquid and easily pour it from one container to another. This book is about the machines, the liquid air that they create, and experiments you can do with the liquids that result.

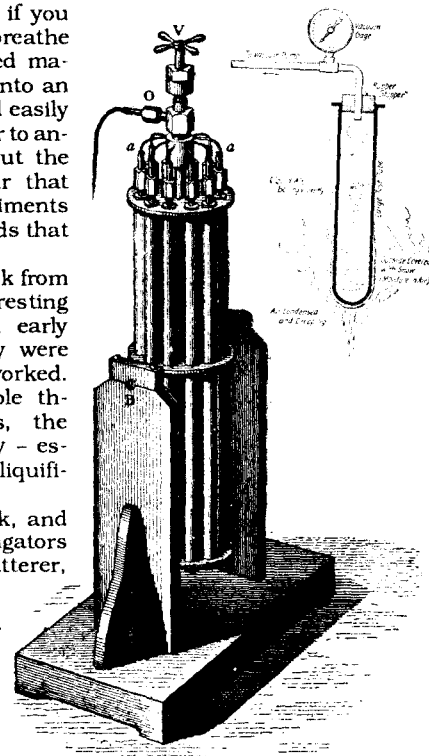
In this fascinating book from 1899, you'll discover interesting historical details about early thermometers, how they were built, and how they worked. You'll learn about simple thermodynamics, that is, the principles of heat energy - essential knowledge in gas liquification.

Review the lives, work, and methods of early investigators including Faraday, Natterer, Colladon, Pictet, Cailletet, Olszewski, Dear, Tripler, and of course, Linde. Explore the Joule-Thomson effect, and examine Hampson's apparatus. Try your hand at liquid

air experiments, and in the last chapter see what 1899 experimenters thought the applications of liquid air should be.

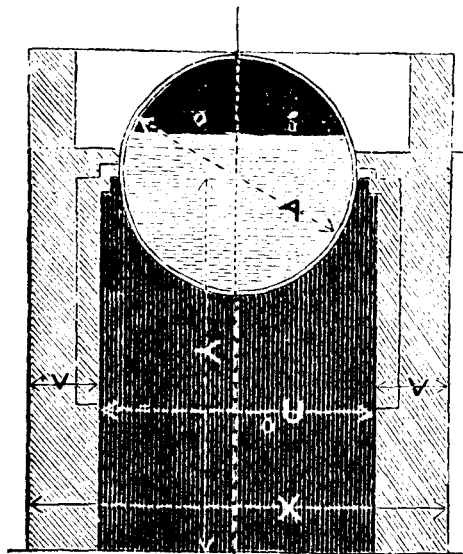
This is not really a how-to cookbook for machines. It is a 17 chapter exploration of early investigators' ideas and their methods. An avid experimenter will find a wealth of detailed data to digest. The important machines and details about them are here in text and diagrams. You will find more enjoyable and useful information on liquid air in this single book than anywhere else that I know of. It might just provide the missing link you need to begin experimenting with very low temperatures.

An unusual book on an unusual topic. High quality. Fascinating topic. Definitely worth having. Get a copy for your reference library. You'll like it. 5 1/2 x 8 1/2 paperback 365 pages  
Cat. no. 20021 \$14.95



# Steam Boilers!

*Rare, practical  
how-to from 1880!*



## STEAM BOILERS

reprinted by Lindsay Publications

You may have thought about generating electricity with steam power. If you want to generate 3000 watts of electricity, you divide by 748 watts per horsepower to find that you'll need at least 4 shaft horsepower — maybe 7 or 8 by the time you figure losses. **Steam Engine Design** will show you how to calculate steam engine bore and stroke to get a given horsepower with a given steam pressure. But how on earth do you figure boiler size? How big is an 8 hp boiler? This booklet will show you.

These pages originally published in 1880, will show you, using tables and diagrams, how to estimate the heating surface of your boiler, what size the grate should be, how much coal will be consumed, how many pounds of water will be evaporated, and more. You will also be shown how to calculate the boiler horsepower using Watt's rule, compensating for ordinary slide-valve engines, or high efficiency automatic cutoff designs.

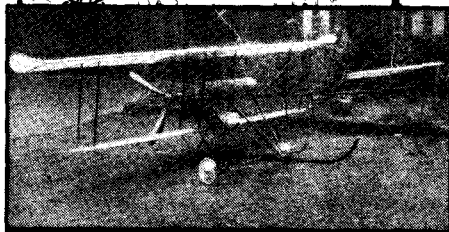
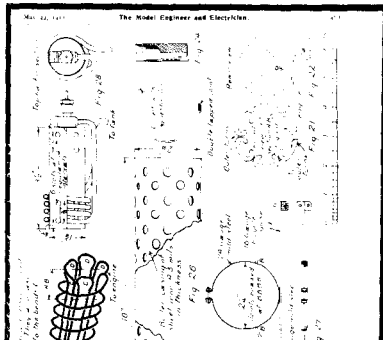
Too small a boiler could bring disaster, while too big a boiler brings inefficiency. Calculate the right size with this. Valuable reference material. Hard-to-find information. Get a copy. 5 1/2 x 8 1/2 booklet 15 pages

Cat No. 856

\$2.00

# Steam Airplane!

*Build a powerful  
flash steam system!*



## STEAM AIRPLANE & MODEL BOILERS

by Model Engineer Magazine

From out of the pages of a 1913 issue of Model Engineer you get this set of plans for a steam airplane as well as tips on building model boilers.

An alcohol or benzene fueled flash steam boiler drives a two cylinder opposed engine that, with a 15" propeller, provides more than a pound of thrust for several minutes. And it weighs less than 2 pounds!

No castings are required. The engine is made from 7/8" dia. tubing with the 1/2" stroke crank being milled from solid stock. The boiler is made from tubing mounted inside a protective case.

You get great detailed drawings and plans. You do not get plans for 4' - 5' wingspan biplane in which the power plant is mounted. You might consider adapting this power plant to radio controlled boats or cars - or even a modern model airplane.

This should be a great project for a small lathe. About the only exotic equipment needed would be a Mapp gas torch for brazing.

The second part contains detailed information and troubleshooting on model boilers from Babcock water tube models to flash tube designs. You get all kinds of valuable tips.

Fascinating reading. Valuable ideas for the model builder. Great stuff. Get a copy. 8 1/2 x 11 booklet 39 pages heavily illustrated.

Cat. No. 876

\$5.75

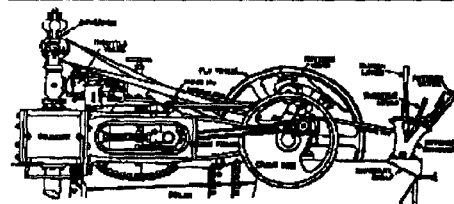
# Case Steam Engine Manual

## CASE STEAM ENGINE MANUAL

by J. I. Case Co. - reprint

If you're interested in steam power, you should have a copy of this manual. It's a reprint of the operator's manual that came with each new steam farm tractor back about World War 1. It's detailed how-to with interesting illustrations.

Chapters include: fitting up and starting a new engine, the feed



**•Learn all the tricks  
and secrets of running  
a steam tractor!**

**•Applicable to all  
steam engines!**

water, firing with various fuels, lubrication and bearing adjustment, handling the engine, the engine proper, the valve gear, the boiler traction gearing, and the compounded engine.

Learn how to gage - or "try-cocks, how to start a Penberthy injector and what to do if it fails to work, how to pack the water-glass, how to pack a gear driven injector pump, how to re-grind check valves, how to fire with low-grade coal and straw, how to adjust connecting rod brasses, details on re-babbiting main frame bearings and upper cannon bearing, and lots more.

If you're into steam, get a copy of this. It's interesting and low cost. Excellent buy. 5 1/2 x 8 1/2 booklet 70 pages

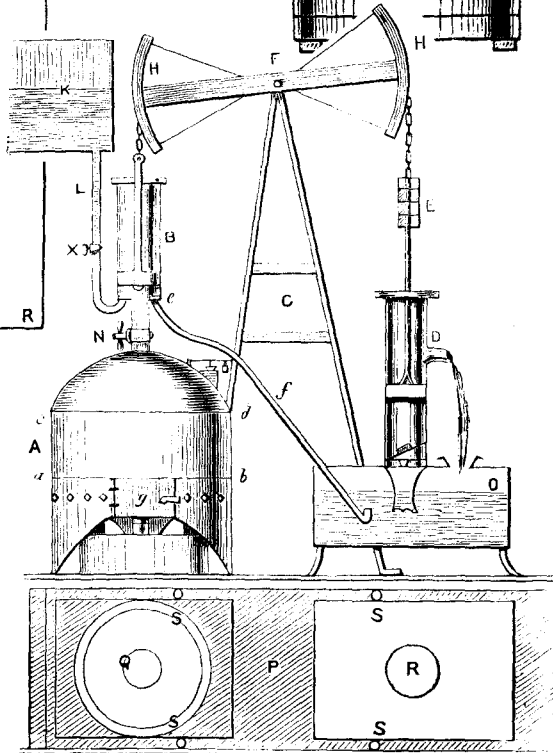
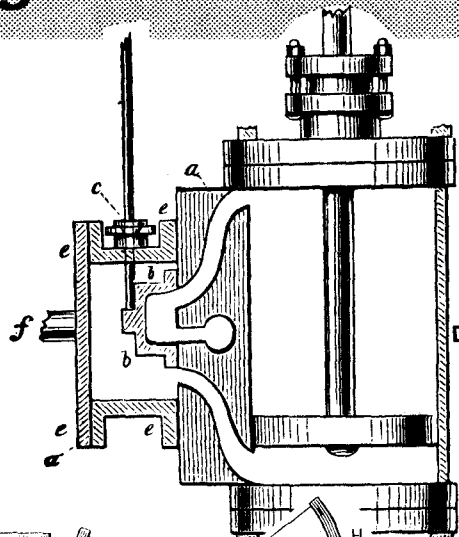
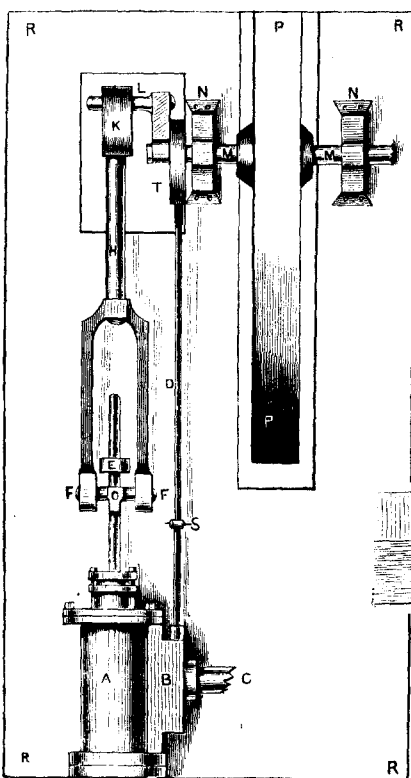
Cat. no. 1260

\$4.00



# Steam Engine Projects

## from the Young Mechanic 1871



### STEAM ENGINE PROJECTS

from the Young Mechanic 1871  
reprinted by Lindsay Publications

The first edition of Young Mechanic was published in England in 1871, and this edition with corrections was published in the U.S. in 1896. The complete book contains 340 pages with widely spaced type and many chapters of little interest to metal workers, such as how to make dovetails for drawers, how to make a table, a tool rack and so on.

Towards the back of the book, however, are a couple of interesting chapters on how to build simple but functioning steam engines and their boilers. Rather than just photograph the pages and reprint them, we reset the type somewhat smaller and closer spaced so that it wouldn't take up so many pages, and yet we reproduced the illustrations at their original size. What you get is the very best (and probably only good part) of the original book at the lowest possible price. Nothing of importance has been omitted.

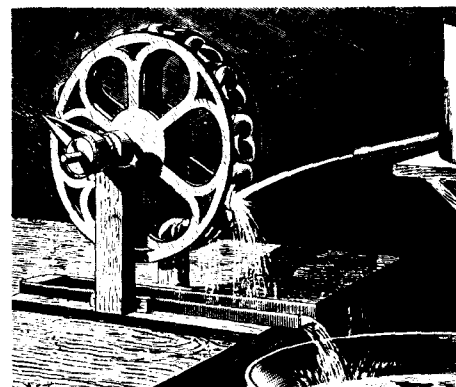
The three chapters reproduced are entitled: *How to Make a Steam Engine*, *Watt's Engine*, and *How to Make an Engine*. You'll learn about the basics of steam power, packing glands, Newcomen's engine, details of Watt's steam engine, and throughout details on building both the engine and boiler.

Certainly, this is not a sophisticated engine. It is very simple, and certainly very inefficient, but *IT IS* an engine that almost anyone should be able to build and operate. Since early plans for simple engines are hard to find, we thought that this should be brought back at the lowest price possible so that engine fans could add it to their library. Even if you don't build the engine described, you will find useful ideas that you can apply to your own design.

Consider this carefully. It's great old information at a very reasonable price. Order a copy. 5 1/2 x 8 1/2 paperback 64 pages leatherette cover  
Cat. no. 20234

\$4.95

# 123 Classic Science Tricks & Experiments



### Secrets of 123 CLASSIC SCIENCE TRICKS & EXPERIMENTS

by Edi Lanners

Lanners has collected parlor tricks and experiments along with beautiful wood cut illustrations from the 1800's.

"These captivating projects will appeal to the curiosity of every child, arouse his or her interest in science; and almost effortlessly get across some of the basic principles of physics, chemistry, physiology, and electricity. It's a gold mine of ideas for school and science fair projects, and a treasure trove of easy-to-perform 'magic tricks' that are ideal for party entertainment...."



Try your hand at the induction top, a leyden jar & electrical tea tray, crystals on a thread, the camphor boat, floating iron, how to fill a sealed wineglass, a simple prism, sundials, glass globe into microscope, the fade-over effect, the Giant Hare, shadow pictures, the coin in the bottle, the disappearing coin, and many, many more.

Some of these are fascinating, some crazy, and some are guaranteed to get you thrown out of your favorite saloon! Interesting book of old time projects. Consider it. 5 1/2 x 8 1/2 paperback 192 pages  
Cat. no. 568

\$7.95

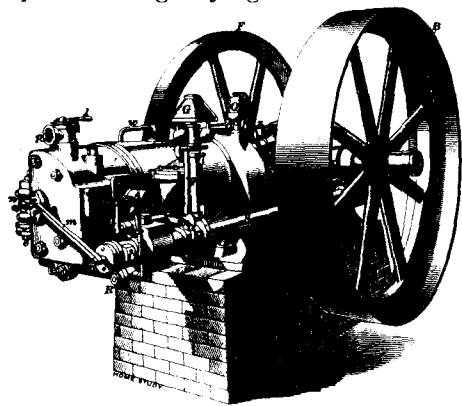
# One-Lung Gas Engine Secrets!

## GAS ENGINE SECRETS

reprinted by Lindsay Publications

From out of the pages of 1897 and '98 issues of Home Study magazine come unusually interesting articles revealing the secrets of early one-lung gas engines.

The first article is quite general explaining the basic engine theory you've known since grade school. But then you explore a one-lung engine with slide valve, poppet valves, ignitions systems, and more. You'll see how to turn coal into producer gas for powering gas engines. This is similar to the process for gasifying wood.



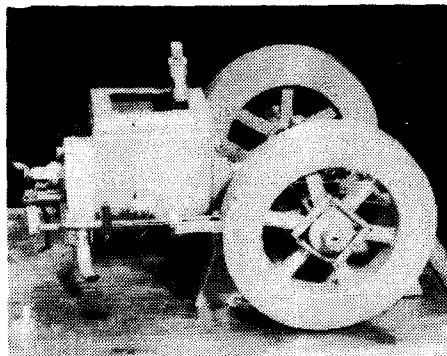
Then you explore two-cycle engines, the Clerk Engine, vertical engines, a valveless engine, and an early carburetor.

Next check out ignition systems: flame ignition, hot-tube igniters, and electrical types. Timing, oilers and mufflers are discussed. A whole section discusses governors, and another covers starting an engine with compressed-air and gunpowder! The last chapter will show you how to test an engine on a homebuilt prony brake, how to take indicator cards, measure heat waste, and how to compute results. Great how-to!

All of this hard-to-find info comes complete with beautiful revealing engravings and cut-away drawings. These drawings alone will provide dozens of unusual ideas for engine designers and builders. Anyone who collects and restores old engines, or who builds replicas should have this. Great reading at a low price. Get a copy! 5 1/2 x 8 1/2 booklet 36 pages  
Cat. no. 897

\$4.50

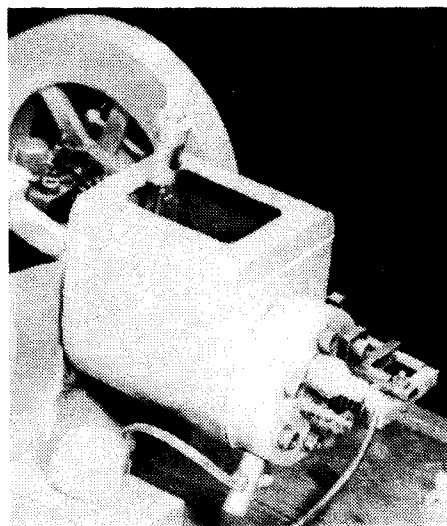
# One Lung Engine Plans!



## HIT & MISS ENGINE PLANS!

by Harold Depenbusch

When I picked up the phone, Dave Gingery started telling me how I should offer these plans, that they were some of the best he had seen. After I saw a copy of the plans booklet, I agreed. They're good.



You can build a 1 1/8" bore x 1 1/2" stroke hit-or-miss engine complete with waterjacket, governor, flywheels and everything else without the use of castings. In this booklet you get type-written how-to in the first half with all the construction drawings in the back. You'll learn how to make the base, the cylinder, oiler, water jacket, flywheels, crankshaft, main bearings, heads, valves, con rod, rings, cam, governor parts and all the rest.

Again, these plans are excellent. The book format is not all that professional, but the info Depenbusch delivers sure is. If you like to build models, I highly recommend this! 8 1/2 x 11 stapled booklet about 40 pages.

Cat. no. 1252

\$15.95

# SAWMILL!

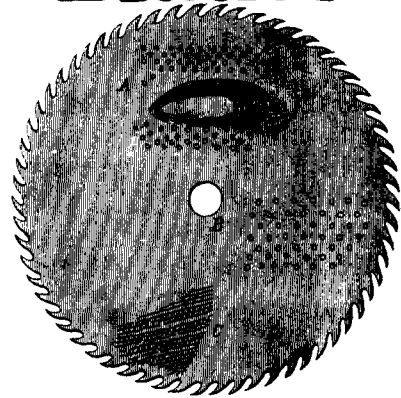
## CIRCULAR SAWMILL BLADES

reprinted by Lindsay Publications

These pages, reprinted from two different 1880's books, will show you how to make, set and true up circular saw blades. You'll get a brief lesson in setting saw teeth, and then several pages on how to hammer a bent circular saw blade back into truth — the best explanation I've been able to find yet.

Pages from the second book "Leffel's Construction of Mill Dams and Bookwalter's Millwright and Mechanic" from 1881 will reveal how two different sawyers of 30 years experi-

# Circular Sawmill Blades



Copyright 1986 Lindsay Publications Inc

ence take a sheet of steel and layout a 50" circular sawblade from scratch. The method had produced blades able to saw, before resharpening, as much as 4500 feet of bark-covered hardwood taken from the Missouri river still embedded with sand and grit. And you also get another set of brief instructions on hammering a blade back into truth.

Rare information! Anyone even thinking of building or running a sawmill MUST have this. The original books cost me a fortune, but your cost is practically nothing when you consider the rarity of the information. Order a copy! 5 1/2 x 8 1/2 booklet 22 pages

Cat. No. 896

\$3.50

# Build a One-Lung Engine!

## GAS ENGINE CONSTRUCTION

by Parsell & Weed  
reprinted by Lindsay Publications

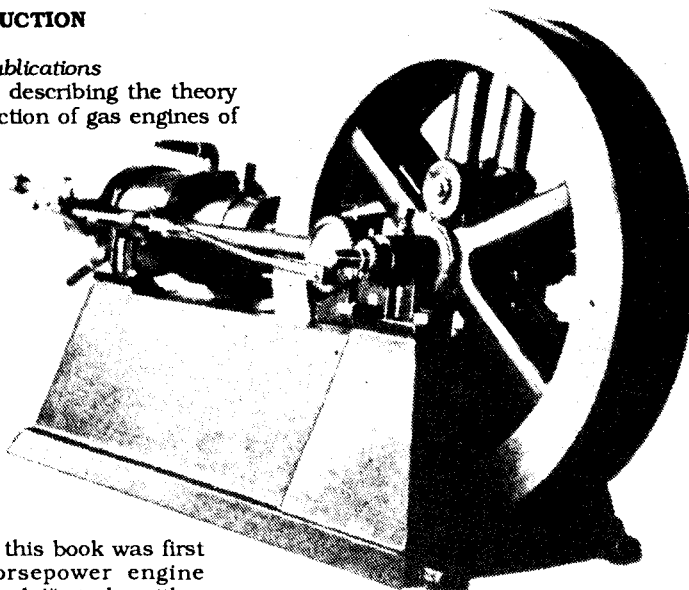
"A practical treatise describing the theory and principles of the action of gas engines of various types and the design and construction of a half-horsepower gas engine with illustrations of the work in actual progress, together with dimensioned working drawings giving clearly the size of the various details for the student, the scientific investigator, and the amateur." After writing that title, it's a wonder the authors had enough energy left to write the book!

Back in 1900 when this book was first published, a half-horsepower engine sported a 2 1/2" bore and 4" stroke with a 14" diameter castiron flywheel! And you can build this nifty one-lunger. There are some problems, however. First you'll need an 8" lathe for all but the flywheels. If you want to turn those, too, you'll need a 14" lathe. The other problem is that castings are needed mostly in castiron. You're shown how to make the patterns, but you're expected to have the castings poured by a foundry.

But everything is here. How to fabricate the piston, connecting rod, the bearings, piston rings, valves, valve gearing, and even a spark plug. To avoid building a carburetor, the engine is designed to be run on gas, but a primitive carb is shown for gasoline. The carb is something you may have to design yourself. You get detailed drawings but not many construction specifics on hot tube igniters used on other engines. Nothing much is said about an ignition coil.

You get page after page of photos showing how the parts are mounted on the face plate and turned to spec. You even get specifications and instructions for making an angle plate, special face plate for turning the flywheel, and several special boring bars.

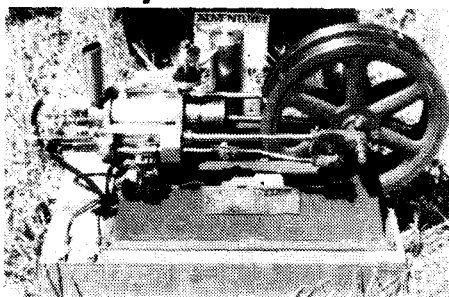
The strengths of this book far outweigh the few shortcomings and limitations. In other words, this is a really good book and a rare one! If you don't have a large enough lathe, or prefer a slightly different design, use this info as a starting place for your own



design. Perhaps you can scale it down and fabricate it on a very small lathe from solid stock.

Get a copy of this. It's an excellent book loaded with how-to and ideas. Well illustrated. Great project! Interesting reading. 5 1/2 x 8 1/2 paperback. 296 pages. Cat. No. 4465 \$11.95

**One man has  
already built several  
engines! Now it's  
your turn!**



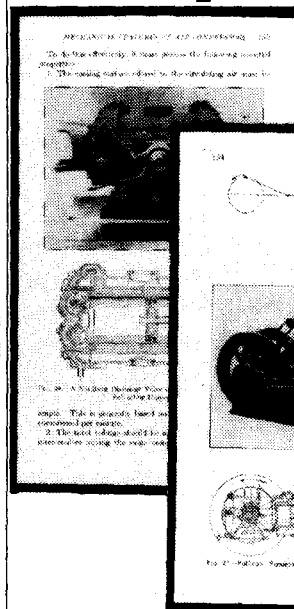
Seventy-two-year-old retired machinist, D.W. McDowell wrote:

"A friend of mine handed me a copy of your summer catalog 41.

"I have an original 1900 copy of the Weed & Parsell book [Gas Engine Construction], and have built five half-size engines from it with a few changes. I fabricated all parts. It can be done, and enclosed are a couple of photos."

Beautiful work isn't it? Looks like a great project. McDowell's engines prove that "Gas Engine Construction" is an old book, but the information is still very useful. When are you going to build your own engine?

# Compressed Air!



## COMPRESSED AIR

by Theodore Simons  
reprinted by Lindsay Publications

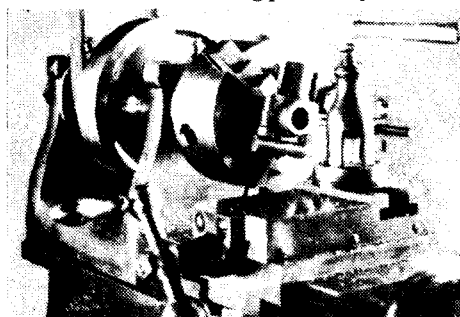
This "treatise on the production, transmission and use of compressed air" was first published in 1914 and reprinted in the 20's.

Chapters include: physical properties of air, behavior of air undergoing compression, air in compressors, theory of compressors, specifications and what they mean, multi-stage compressors, effect of altitude, compressor cooling, and more. Part Two covers the transmission of compressed air and the pipe needed. Part Three covers the use of compressed air, theory of air engines, effect of heat loss, internal energy of air, system efficiency, reheating, and more. Part Four gives examples of reciprocating compressors of that era and discusses features and accessories. Some of these compressors are still being used!

Compressor technology has changed since this book was first published. We have new alloys, seals and materials, but compressed air is still the same, and it still acts the same.

You get useful math for sizing compressors for a particular job, for figuring how fast air will move through pipe, how many hp will be needed, and more. It's all practical math.

If you have or are intending to get a compressor and/or air tools, you should have a copy of this. It will greatly add to your knowledge of air power. A good book. One of the easiest-to-understand discussions of theory I've seen in a long while. Put one in your library. 5 1/2 x 8 1/2 paperback 173 pages. Cat. no. 4376 \$8.95



# Diesel Engine Repair!

## DIESEL ENGINE REPAIR

by John F. Dagle

If you need a good diesel book, order this one. It's top rate.

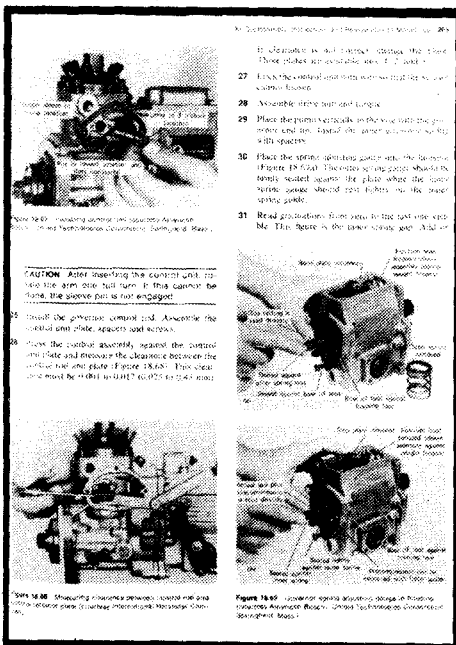
You get twenty-nine chapters that will show you how to troubleshoot, tear down and repair diesel engines of all kinds. And it's beautifully illustrated with illustrations supplied by Cummins, Detroit Allison, IH, Case, John Deere and others.

Included are: pistons and rings, rod assembly, main bearings, lube system, cooling system, air intake, injection systems, governors, starting systems and more. You get individual chapters on injector nozzles, American Bosch injection systems, Robert Bosch injection pumps, CAV-Simms, Roosa Master injection pumps, Cummins PT fuel system, Detroit and Caterpillar. You get complete info on combustion chambers, heads, the tools you need, and injector pump test bench and much more.

Like I said, if you need a GOOD diesel book, look no further. (It's so good that I wish I had published this.) Grab a copy. Heavily illustrated. Top rate. 9 x 12 hardcover 586 pages 1982

Cat. No. 1127

\$45.95



# Repair Briggs & Stratton Engines!

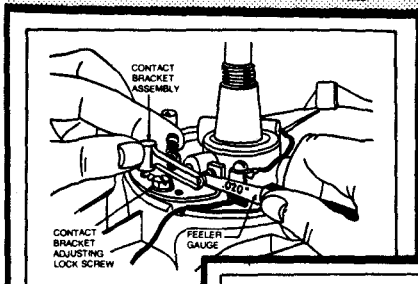


Fig. 2-11. Gap adjustment for two-point adjustment screw. (courtesy Briggs & Stratton)

condenser and coil wires at the point adjustment screw (Fig. 2-11) the condenser hold-down screw.

Assemble in reverse order. Plate is located by small studs block. Install the condenser and the point-set clip. Route wires and clear of the dust-cover clip. open and, using the adjustment gauge, set the point gap (Fig. 2-11).

Remove the spark plug tension lead to it, and ground cylinder head or block. Install the over the crankshaft stub. It is now

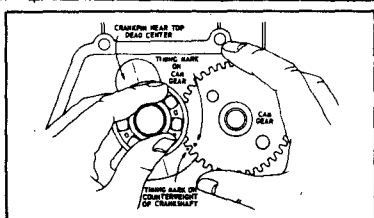


Fig. 7-12. Camshaft on ball bearing engine is indexed with a mark on the crankshaft counterweight. (courtesy Briggs & Stratton Corp.)

through both sides of the iron block. Working from the PTO side, use a hammer and blunted 1/4-in. diameter punch to drive the support out through the flywheel side of the block (Fig. 7-13). The distance will be left as the flywheel-side expansion plug is held by the support shaft.

Camshaft assembly is essentially the reverse of disassembly.

## HOW TO REPAIR BRIGGS & STRATTON ENGINES 2nd Ed

by Paul Dempsey

I've been told Briggs & Stratton engines are like manure; they're all over the place. But the biggest difference I see is that I usually stub my toes on engines, and step in manure. With this book and some scrounging you should be able to recycle old engines. I don't know what you'll do with the manure.

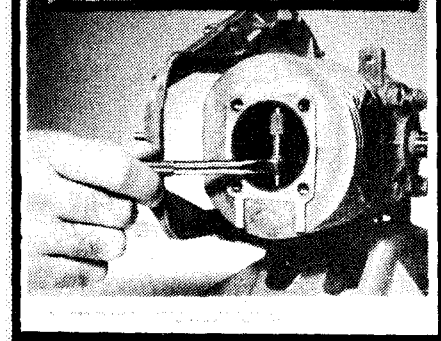
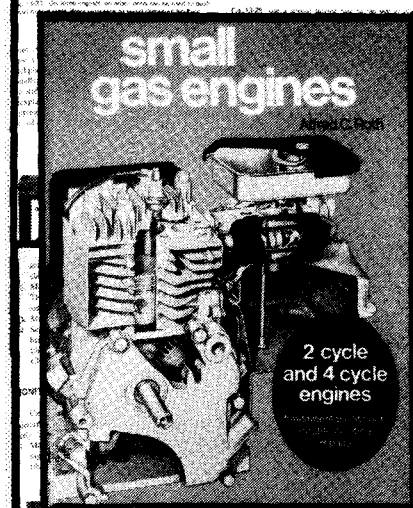
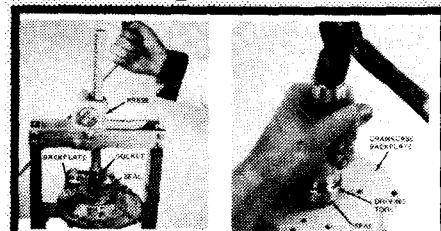
Chapters include: basics, ignition, carburetors, governors, starters, charging systems, and total rebuilding. This book is loaded with practical how-to: adjustments, troubleshooting, assembly diagrams, charts, hints and tips and all the rest.

B&S engines are common. It seems that you should be able to pick up junkers and combine the parts to get running engines at little cost. Or keep your lawnmower or rototiller going. Or make an emergency light plant. Good basic repair book. 5 1/2 x 8 1/2 paperback 190 pages

Cat. No. 1265

\$8.95

# Repair Small Gas Engines!



## SMALL GAS ENGINES

by Alfred C. Roth

From this top quality technical school textbook you'll learn how to troubleshoot, adjust and rebuild small two- and four-cycle gas engines.

It's all here: carburation, electrical, cooling, lubrication systems, engine tune-up, overhauls, cylinder reconditioning, pistons and rings, rotary engines, lawn mower repairs, small gas engine applications and more.

Every topic is well-illustrated with large, bright photos and drawings. And although it's simply written, it's packed with useful information. "Small gas" has been around for years and it is continually updated to stay current. It's an old standard. A little bit expensive, but excellent quality. 8 1/2 x 11 hardcover 264 pages heavily illustrated.

Cat. No. 179

\$22.95





# Secrets of Mining & Refining from 1556!



## DE RE METALLICA

by Agricola

translated by Herbert Hoover

President Herbert Hoover and his wife translated this 1556 mining book from Latin in 1912. And what a book it is!

His text and more than 300 original woodcuts will show you 16th century mining and refining techniques. You'll learn about finding veins of ore, opening mines, and refining iron, lead, gold, bismuth, antimony, cadmium, cobalt, copper, silver and tin. All the ancient skills are revealed.

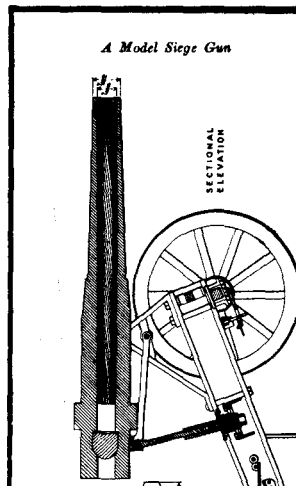
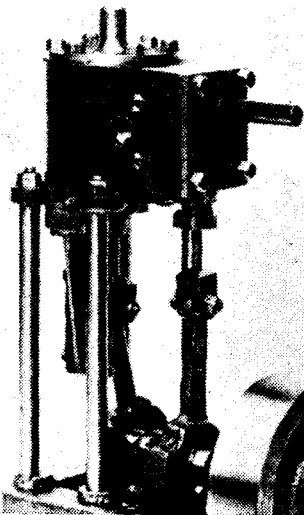
Thumbing through this incredible volume is like rediscovering a long lost volume hidden in some remote corner of an abandoned library. It's a little tough to read in places probably because it was written over 400 years ago. But you'll like it. Quite unusual! A true classic! Order a copy! 7x11 638 pages paperback.

Cat. No. 1132

\$15.95

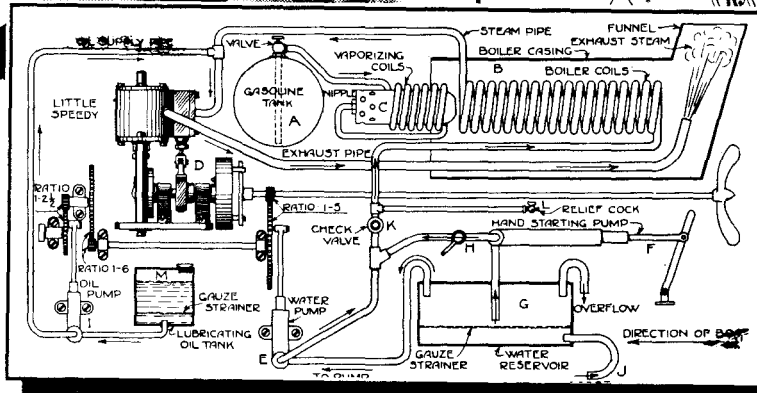
# Model Making!

More projects than you'll ever  
have time to complete!



877

Fig. 300-Sectional elevation of the model siege gun



## MODEL MAKING

by Raymond F. Yates

reprinted by Lindsay Publications

"A practical treatise for the amateur and professional mechanic - giving instructions on the various processes and operation involved in modelmaking and the actual construction of numerous models, including steam engines, speed boats, guns, locomotives, cranes, etc. Lathe work, pattern work, electroplating, soft and hard soldering, grinding, drilling, etc., are also included."

Sounds like a great book doesn't it? Actually the claims are a little inflated because the author tries to cover too much. Each topic could be a book in itself. Still, it is fascinating, and guaranteed to fill your head with ideas.

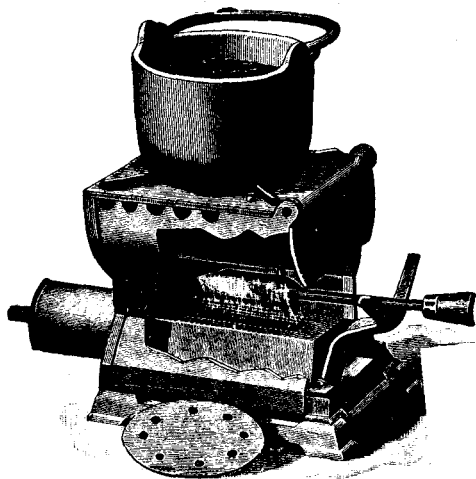
Chapters include: workshop, lathe work, drilling, soldering, hardening and tempering steel, abrasives, patternmaking, electroplating, model slide crank steam engine, model twin-cylin-

der engine, single-cylinder engines, model twin-cylinder marine engine, flash steam plants, flash steam plant for model airplanes, model steam turbine, model boilers, boiler fittings, model hydroplane, lake freighter, gasoline engine, model steam locomotive tank, siege gun, steam yacht, 34" monoplane and much more!

Some of these projects need castings which are not available. But with all the dimensions and photos given, you should be able to modify and improve the designs. This is great raw material for the model builder.

So if you have a small lathe and want to build something in the worst way, or you just collect plans, or you just want a great book for a rainy afternoon, grab this gem from 1925. Loaded with great illustrations and great ideas. Don't pass it up. Order a copy today! 5 1/2 x 8 1/2 430 pages Cat. no. 4325 \$14.95

# FURNACE & FORGE!



**FURNACE & FORGE SUPPLIES**  
reprinted by Lindsay Publications

Foundry and forge fanatics (that means you!) will enjoy studying these pages taken from the 1899 G.W. Gesswein & Company catalog - a five hundred page volume featuring every imaginable tool a metal worker could want. In this low cost reprint you'll find all the pages pertaining to forges, furnaces, crucibles, soldering irons, furnaces,

blowpipes, burners, ingot molds and so on.

Fun reading. Great ideas if you design or experiment. Wall-to-Wall illustrations. Get a copy! 5 1/2 x 8 1/2 booklet 28 pages. Cat. No. 895 \$3.95

# Melt Cast Iron in a Cupola!

**CUPOLA PRACTICE & MIXING CASTIRON**  
reprinted by Lindsay Publications

"Iron has actually been melted in an old flour barrel that was lined with clay and pieces of brick. Iron has been successfully melted in a 12-inch cupola having a blast furnished by a blacksmith bellows"

You'll learn about firing cupolas in the first 58 pages of this reprint, and the mixing of iron scrap in the remaining pages.

You'll learn about tuyeres, height and position of slag holes, long heats, multiple rows of tuyeres, central tuyeres, construction of charging doors, repairing linings, and more. You get instructions on the firing and operation of the cupola as well. And there's one small, but fascinating section on melting iron in a small cupolas.

To get usable castiron from your cupola you must choose the right castiron scrap to melt, and you'll learn how right here. More than likely, castiron composition has changed in the 80 years that have passed since this was written, but there are no doubt still at least a few useful lessons to be learned.

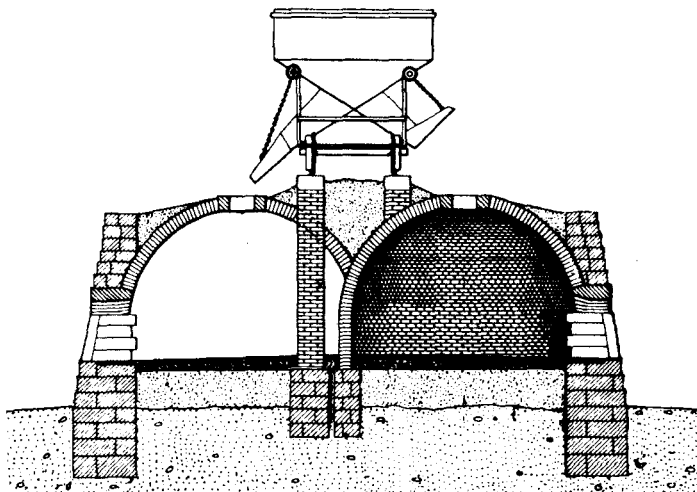
An interesting book for the cupola operator. Obviously, this has some of the same information as other cupolas books, but it has unique information that makes it worth having. If it weren't good, I never would have reprinted it. Get a copy. 5 1/2 x 8 1/2 paperback 128 pages

Cat. No. 4120

\$7.50



# Charcoal and Coke!



**MAKING CHARCOAL AND COKE**

If you have plenty of wood, you can easily turn it into charcoal to fire the charcoal foundry, melt cast iron, or even refine iron ore like they did a century ago.

The first part of this booklet tells you the basics involved in building a charcoal retort, a very simple device that will turn wood to charcoal very efficiently. You'll be shown the important principles and how to operate the retort. You won't get nut-and-bolt instructions, because you'll probably have better ideas of your own depending on what kind of materials you can scavenge. The design is not critical and that means you can cut costs by using old barrels or drums, or even an old woodstove. This info is worth the price of the booklet alone.

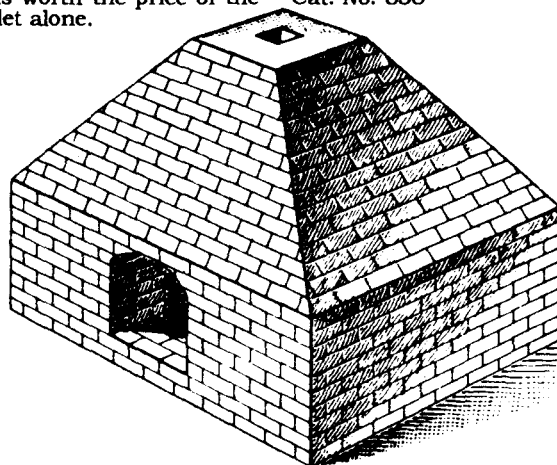
Next, you get reprints from an 1895 encyclopedia detailing the process of making charcoal and coke. You'll learn which woods produce what types of charcoal. You'll learn how these fuels were made even in the most primitive countries. You'll learn how even sugar can be turned into charcoal.

Pages from another book, published about 1905, will show you how coal was originally "coaked" in large piles much like charcoal, and later in bee-hive kilns. Detailed cross sections, operating diagrams, and test results will give you valuable information should you choose to develop your own coking process.

Valuable information at a low price. A must for foundrymen. Interesting reading. 5 1/2 x 8 1/2 23 pages.

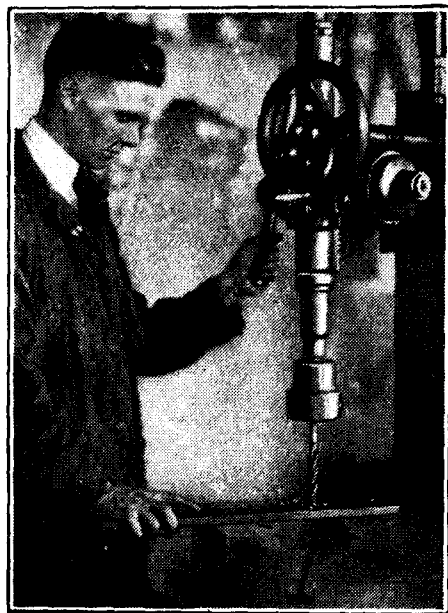
Cat. No. 858

\$3.00



# DRILLERS' HANDBOOK

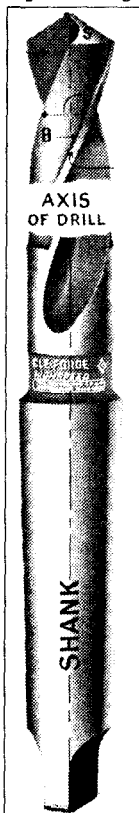
by Cleveland Twist Drill Co.



## HANDBOOK FOR DRILLERS

by the Cleveland Twist Drill Co.

reprinted by Lindsay Publications Inc



This eleventh edition from 1925 was intended to teach machinists the underlying theory of twist drills.

You will learn about the parts of a twist drill, tips on grinding or sharpening, correct feeds and speeds, tips on drilling hard materials, brass, use of cutting compound, and more. Chapter V covers common errors and their results, including broken tangs, how to "drift out", using a lead hammer, warming high speed drills before using, and more. You'll find tables of feeds and speeds for drills from the tiniest numbered drill to 3" dia. drills with Morse taper shanks. Finally you'll discover several pages of advertising promoting Cleveland Twist drills, reamers, counterbores, end mills and more.

This is an interesting little booklet loaded with valuable twist drill information that you should know. Order a copy of this inexpensive gem. You'll like it. 4 1/2 x 8 booklet 48 pages heavily illustrated  
Cat. no. 20056 \$3.50

# Learn the secrets of making Green Sand Molds!

## GREEN-SAND CASTING

reprinted by Lindsay Publications

So now you've built a cupola or small furnace and you have a ladle of molten iron or aluminum. Now what are you going to do with it? You can't very well pour it into a cake pan, bread box or an old boot. You've got to pour it into a sand mold where it will freeze into a useful casting.

You probably already realize that making green-sand molds (the sand isn't really green, just wet) is more of an art than a science. Where to put sprues and runners, vents for steam and gas, and just how hard to ram up the sand are skills that come only with practice.

Old timers will tell you that you can't really learn green-sand molding from a book, and they're probably right. But this book comes as close to revealing the secrets as any I've seen. When you see the gorgeous illustrations, you'll agree.

This is a reprint from a 1903 technical school textbook. It will show you step-by-step the tools, materials and methods. Discussions include sands, tempering, sieves and riddles, rammers, required hardness, deep molds and venting, drawing the pattern, closing and

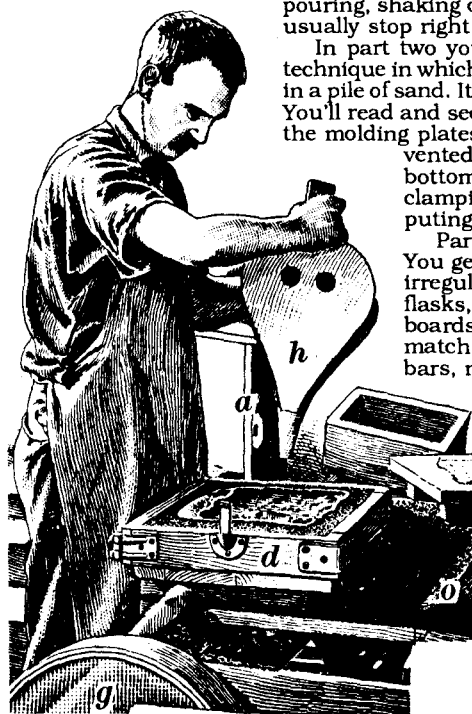
pouring, shaking out the casting, and much more. Other books usually stop right there. But this book is just getting started.

In part two you'll learn about molding by bedding in — a technique in which you build the mold right on the foundry floor in a pile of sand. It's quite a skill to level and set up such a mold. You'll read and see how soft and hard beds are formed up, how the molding plates are hammered in, how beds are made and vented for cope molds. There are discussions on bottom projecting cores, rodding of projections, clamping and weighting the mold, methods of computing weights, mold clamps and more.

Part three specializes in molds for casting iron. You get rare illustrated how-to on making joints for irregular forms, three-part molds in three-part flasks, three part molds in two-part flasks, follow-boards in forming joints, plaster-of-paris matches, match plates, gagers and soldiers, setting of cross bars, nails and rods at joints and corners, valuable lessons on patching molds, swabbing broken corners, sleeking and printing dry blackening, skin-dried molds, types of gates and pouring basins and more.

Part four is more of the same: chaplets, problems such as blowholes, shrink holes, shrinking and contraction, techniques of proper feeding, bench molding with different type of snap flasks, and on and on.

Most of what you learn in this book is on a slightly larger scale than what a home foundryman might need. But the techniques are exactly the same. The illustra-



tions are dynamite! You won't just be told how it was done, you'll see for yourself.

All I've ever poured is aluminum using Dave Gingery's charcoal foundry. If you've ever tried it, you'll know how much fun it is and how quickly you get hooked on it. You ram up a mold, melt down some aluminum cans and scrap and make a pour. No matter how good a casting is, you'll want to make it better and more complicated next time. But how can you make such improvements? The answers are right here in this book.

I examine a great many old foundry and machine shop books. They're all interesting, but few have excited me like this sand casting book. Probably, because having cast aluminum, I appreciate how valuable and rare this information is. I just couldn't wait to reprint it.

If you have or ever intend to pour aluminum, brass, or iron, you should have a copy of this. It is a must book for the foundryman. This is a gem, and I can't give it a higher recommendation. 5 1/2 x 8 1/2 paperback 174 pages

Cat. no. 4082

\$9.95



# PROSPECT!

## THE PROSPECTOR'S FIELD-BOOK AND GUIDE

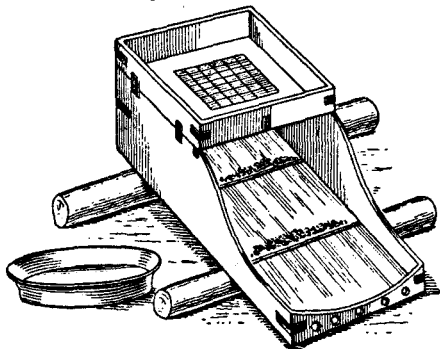
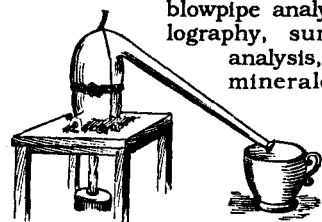
by Prof. H. S. Osborn

reprinted by Lindsay Publications

Nuts! You don't need satellite photographs and million-dollar equipment to find valuable ore deposits. The old timers didn't. One of those oldtimers will teach you the state of the art as it was in 1901.

He'll teach you the basics of mineralogy, blowpipe analysis, crystallography, surveying, ore analysis, and special mineralogy. Then you'll get detailed information on tellurium, platinum,

silver, copper, lead, tin, mercury, bismuth, nickel, cobalt, cadmium, zinc, iron, aluminum, antimony and manganese. A chapter touches briefly on alum, arsenic, borax,



clays, mica, meerschaum, rock salt and more. Another chapter goes into petroleum, ozocerite, asphalt and even peat. Chapter 15 will even teach you about gems and precious stones.

This book can be used all over the US from East coast to West. Here in the Midwest where coal and lead ore are about the only things mined, traces of gold have appeared while drilling water wells, and low-grade deposits of iron ore have been found along the river. There's probably many other minerals yet to be discovered.

You can explore for gold, silver and platinum and hope to get rich. More realistically, it might be fun to locate a local vein of iron ore or copper ore and try smelting metal the way the ancients did it.

Imagine the fun you'd have bragging that you not only built a lathe, but that you actually extracted the metal used in its construction from ores you dug yourself! How many people have done that? The first step in doing that is finding the ore, and this book can certainly help.

If nothing else, you'll find this to be an easy-to-read text on minerals and basic geology. And it's good. The first edition came out in 1892, and this is a reprint of the 5th edition in 1901. So you know this was a popular book in its day. Get a copy. 5 1/2 x 8 1/2 paperback 308 pages

Cat. no. 4570

\$9.95

# Ancient Arts!

## ON DIVERS ARTS

by Theophilus — translated by Howthorne & Smith

Theophilus probably wrote this in a Benedictine monastery in Latin on parchment about 1120 long before the printing press, as can best be determined. What he wrote about was the technology of the day.

You can learn the tricks and techniques of painting, working glass, and working metal. You get details on mixing pigments for various hues, working gold and tin leaf, applying leaf to books, making ink, making glass, details of the furnace, the composition, spreading out glass sheets, making long-neck flasks, coloring glass, gutting, annealing, glass molds of iron, assembling windows and much, much more.

In metalworking you learn about anvils, bellows, hammers, engraving tools, punches, files, hardening files, crucible for gold and silver, milling gold amalgam, setting gems and pearls, refining copper, separating gold from silver and copper, and much more.

Each section is short, but gives the essential details. The original illustrations have been reproduced. Also included are photos of typical work from 1100's. This is a beautiful combination of solid technology, myth, and folklore, just as it was. An unusual book. Lost secrets! Interesting reading. Reasonably priced. 6 x 9 paperback 45 illustrations. 216 pages.

Cat. No. 160

\$6.50



# Recover Precious Metals!

## RECOVERY AND REFINING OF PRECIOUS METALS

C.W. AMMEN

### RECOVERY AND REFINING OF PRECIOUS METALS

by C. W. "Bill" Ammen

You really can recover precious metal from ores, black sands, scrap jewelry, old film, spent plating solutions, electronic scrap, catalytic converters, and more. Best of all, you don't have to be professional chemist or invest in expensive equipment. Ammen will show you all the secrets.

Chapters include: primary precious metals, chemistry, testing & identification, recovering and refining values from principles, electrorefining, collectors and separators, wet chemical master plan, various systems, black sands, fire assaying, and three appendices.

You get clear step-by-step procedures revealed by someone who has obviously done it. You'll learn what chemicals you need, how to use them, and even how to pour silver and gold ingots!

It's expensive, but it delivers information that I've seen nowhere else. Put some of these techniques into practice, and you'll probably quickly earn many times the cost of the book. Great book. Best of its kind. 6 x 9 paperback 328 pages.

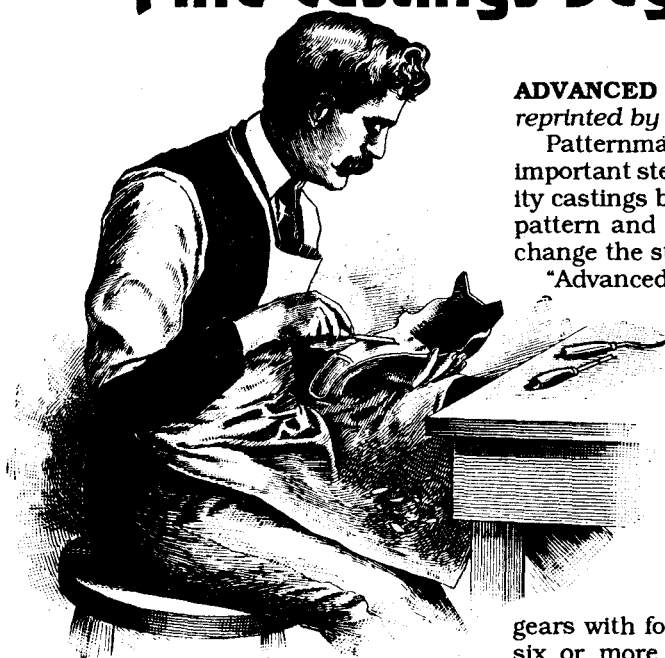
Cat. No. 1210

\$35.95



# PATTERNMAKING

Fine castings begin with fine patterns.



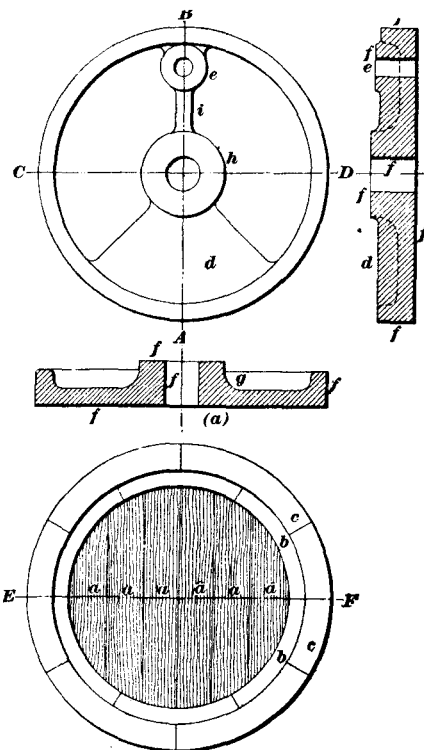
## ADVANCED PATTERNMAKING

reprinted by Lindsay Publications

Patternmaking is probably the most important step in producing high quality castings because minor changes in pattern and fillet shape can radically change the strength of a casting.

"Advanced Patternmaking" starts where "Patternmaking 1905" leaves off. You get dozens of examples demonstrating the techniques of skeleton patterns, green-sand and loam patterns for large pipe bends, patterns and core boxes for globe valves and three-way cocks. You'll see patterns for wheels and gears with four arms, web plates, and six or more arms. You'll see how a pattern for a shaft coupling is made.

Some of the more interesting examples you'll see are the patterns for steam engines: cylinder head and cover, disk crank, steam chest cover, Corliss engine valve gear and slide-valve engine cylinder.



## PATTERNMAKING 1905

reprinted by Lindsay Publications

The easiest way to work metal is not to work it all. What you do is create the metal part you need from soft, easy-to-work wood. Then you use this wooden pattern to create a cavity in a sand mold into which molten metal is poured. When the casting cools, you have a exact copy of your pattern in metal.

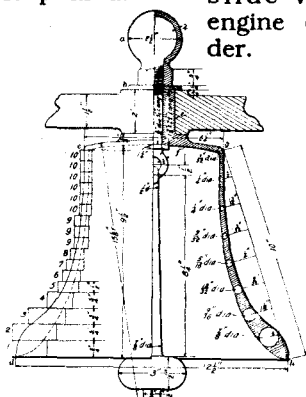
Patternmaking is both an art and a science. The quality of your casting can be no better than the pattern you use. This reprint from "Modern Engineering Practice" published in 1905, will teach you what you need to know.

Learn about wood and its qualities, necessary wood working tools, basics of molding, construction of core boxes, multi-piece patterns, and more. You'll learn how to make built-up patterns for pulleys and flywheels, lathe face plates, pipe fittings, engine cylinders, gear wheels and more.

If you pour metal, then you should have this book on patternmaking. Of all the patternmaking books I've seen old or new, this is among the best. Order a copy for your foundry library today! 5 1/2 x 8 1/2 paperback 144 pages

Cat. no. 4031

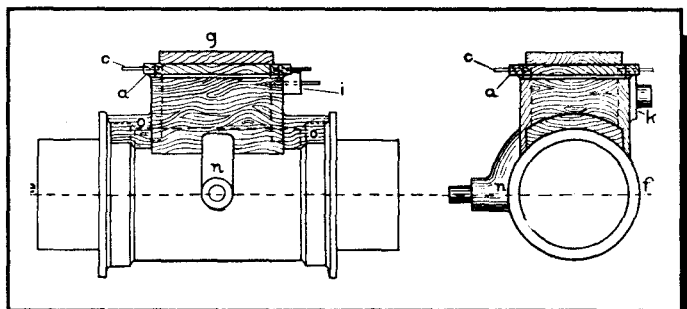
\$8.95



for casting chain, spur gear and rack, miter and bevel gear patterns, worm and worm gears, and hollow arm flywheels.

Finally, the last section will show you such complicated things as patterns for screw propellers and incredible intricate carved patterns for cast-iron parlor and cook stoves. Making stove patterns is an incredible skill, and this is the only place I've ever seen it taught.

Each example is accompanied with



You'll find a stop or throttle valve, special three-way cock, small bell, patterns and core boxes

descriptive text, telling you how the patterns are made where it isn't obvious, how to make the core boxes where needed, and how the pattern is used to ram up the mold.

If you're into foundrywork or would like to try it in the future, here's a book you should have on your reference shelf. Melting metal is one thing, but turning molten metal into something useful is another. And this reprint of a 1903 correspondence school textbook will reveal tricks of the trade that are almost impossible to learn elsewhere.

A great book with great illustrations! Reasonable price! 5 1/2 x 8 1/2 paperback 144 pages

Cat. no. 4090

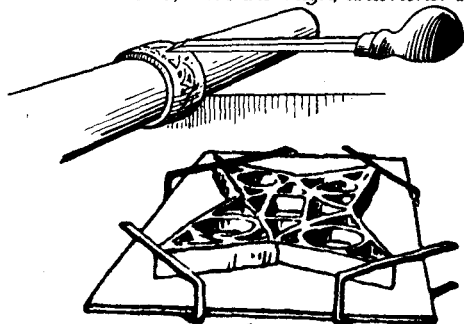
\$8.95

# Metalwork & Enamelling

## METALWORK & ENAMELLING

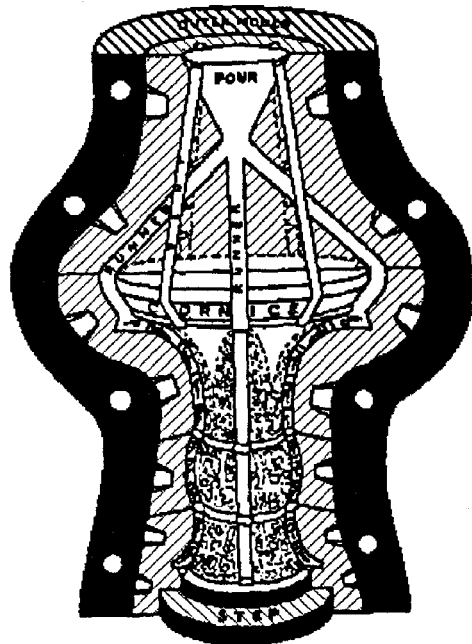
by Herbert Maryon

"The author... treats every aspect of the craft in detail, from basic tools to casting and enamelling in separate sections. After discussing materials and tools, he provides a treatment of soldering in rare metals that is more extensive, more thorough, and richer in



282

practical advice than can be found elsewhere. He continues into filigree work, the setting of stones, raising and shaping, spinning, repousse' work, wire twisting, hinges and joints, inlaying and overlaying, niello, alloys and stratified fabrics, enamelling... metal casting, construction, setting out, polishing and coloring, design and assaying



and hallmarking. Wherever possible, he analyzes examples of fine craftsmanship, ancient and modern to illustrate practical aspects of the process he is explaining...."

This is a reprint of the 1959 4th edition, the first edition of which first appeared in 1912. This is a bible of first class metal artistry and how it is done. Very reasonably priced. Unusual information. Put a copy of this in your reference library, if nothing else. It's worth having. 5 1/2 x 8 1/2 paperback, 335 pages, over 300 illustrations Cat. no. 1288 \$5.95

# COPPERWORKING

## COPPER WORK

by Augustus F. Rose

reprinted by

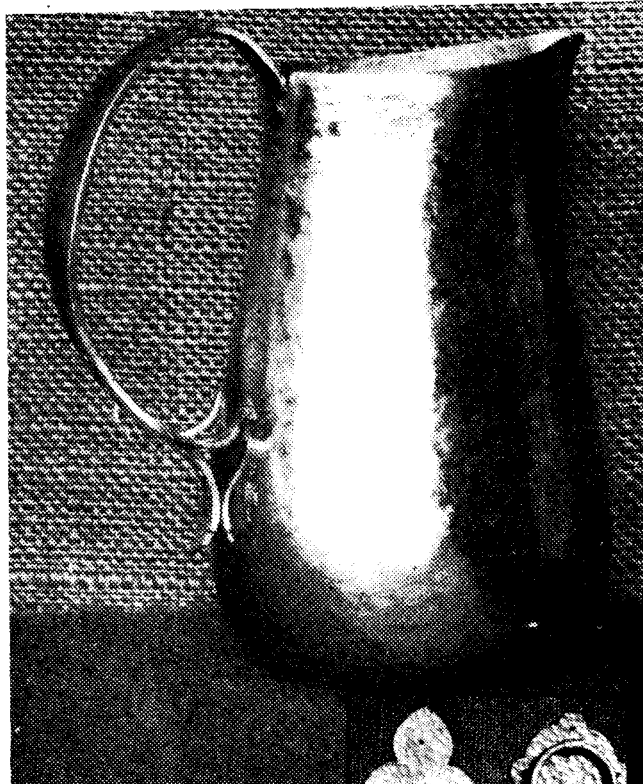
Lindsay Publications

From the year 1908 comes this small, well illustrated, and very interesting how-to manual for high school students. Admittedly, some of the projects are dreadfully simple, but others amaze me. I would be hard pressed to turn a flat sheet of copper or brass into a beautiful pitcher like these kids do.

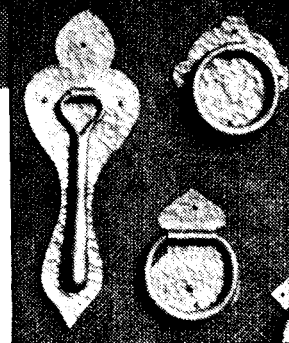
You'll learn what types of saws, hammers, and anvils to use. You'll learn how to make simple objects such as hinges and finger pulls, and then you'll graduate to box corners.

The fun starts when you anneal a sheet of copper and start working it on an anvil to produce a pitcher, porringer, bowl, ink pot, or a spoon. You'll learn how to make rivets, draw wire and small tubing, polish, make a stamp out of tool steel, and even some simple enameling.

This book is designed for young people who are to be assisted by a teacher. The instructions are therefore brief, maybe even too brief, and the illustrations nu-



merous. But I expect that you have at least a little mechanical ability, so you shouldn't need extremely detailed instructions anyway. Many pages are covered entirely with photos and/or drawings to instruct and inspire.



## CONTENTS

Introduction, Equipment, Materials  
Problems, Escutcheons, and Hinge Tails  
Drawer and Door Pulls and Hinges  
Finger Plates, Pad Corners, Box Corners, Stamp Box and Match Box  
Sconce, Picture Frame, Soldering, Repousse or Embossing  
Raised Forms  
Porringer, Trays or Plates  
Ink Pot, Sealing Wax Set and Watch Fobs  
Spoons, Sugar Tongs and Tea Scoops, Rivets, Drawing Wire, and Tubing, Polishing, Stamping Work, Coloring Enameling

I won't tell you this is the greatest book ever written on an interesting craft, but it is a lot of book for a modest price. It's something you can do just for the fun of it. Or perhaps you can turn out a product to sell at arts & crafts shows. No matter what your angle, I think you'll like this. Order a copy. 123 pages paperback 94 illustrations Cat. no. 20145 \$5.95

# Amazing Induction Heating!



## High Frequency INDUCTION HEATING by Frank W. Curtis

Wrap a coil of wire around a chunk of metal and feed the coil with high frequency, high power AC current, and before long, the metal will be red hot and then molten.

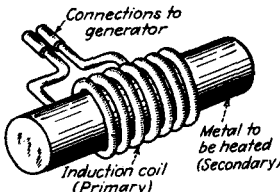
This technique is not a simple one, and is generally not something done in a home shop. And this is NOT a how-to book. But so many people have asked about induction heating, that I knew this book should be reprinted.

It was originally published during World War II most likely to train engineers in using the technique for war production. Chapters include principles of induction heating, types of equipment, design of heating coils, brazing and soldering, hardening and heat-treating, fixtures for induction heating, miscellaneous applications, designing for induction heating, and dielectric heating.

An ingenious experimenter may be able to take the information and perfect a small unit for home use. Several schematics for the generators are shown including a simple spark-gap unit and a simple vacuum tube design. You'll find page after page of practical useful information with very little heavy theory or math.

You'll see all types of interesting applications, including information on using induction heating to braze tungsten-carbide inserts into tool flins. Hardening gears and crankshaft bearings is another useful application. But most people would probably be happy just to melt metal in a crucible.

Truly a top-rate book on an unusual topic. If you've ever wondered about induction heating, you'll like this. Well illustrated. Easy to read. Very informative. Order a copy. 5 1/2 x 8 1/2 paperback 235 pages. Cat. no. 4716 \$7.95



# Ornamental Metal Casting

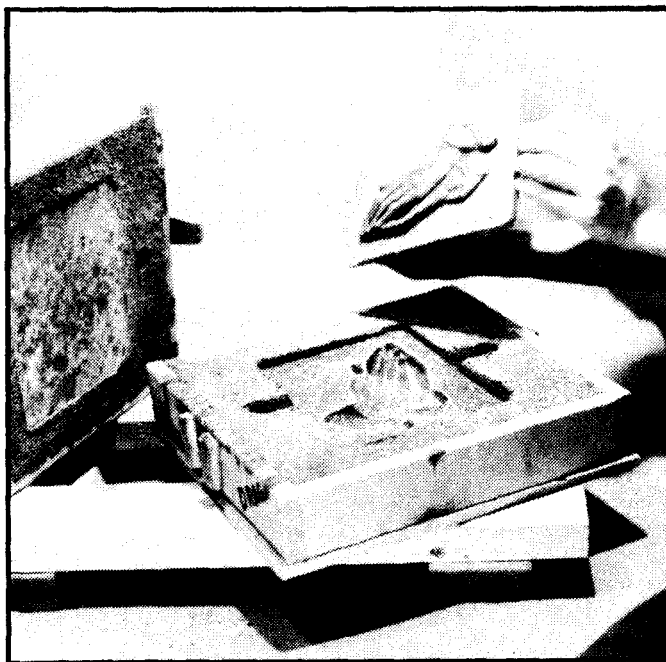
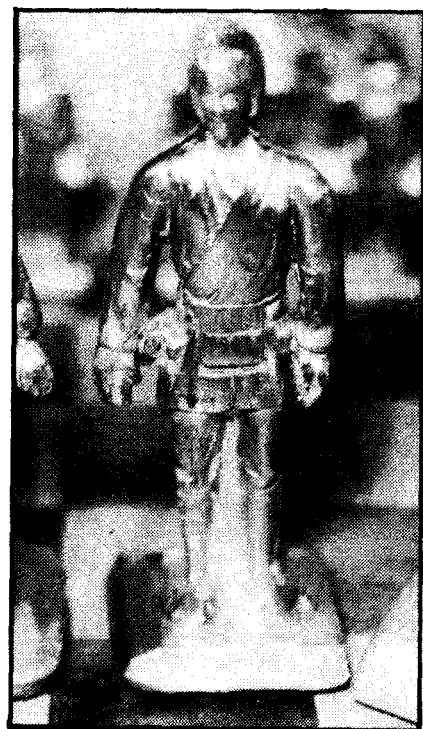
## ORNAMENTAL METAL CASTING

by Robert Whitmoyer

You can see from all the other books in this catalog that the melting metal and pouring castings is an extremely valuable skill in the process of designing and building machinery. But casting metal can be a whole lot more than that!

Whitmoyer will show you how to take Gingery's charcoal foundry and push it into new areas. You'll learn how to build and operate a charcoal furnace capable of melting 2 1/2 quarts of aluminum. You'll learn how to make a beautifully simple, yet easy-to-handle cru-

**Loaded with  
Photographs!**



cible, flasks, a molding table, and all the other components you'll need.

Then, you'll learn how to mold and cast plaques, a sundial, solid figurines, penny bank replicas, and a large fountain that would cost you a fortune to buy.

One of the strongest points of this book is the info on lost wax casting techniques. You'll learn simple techniques of using plaster-of-Paris to make incredibly detailed castings. Wait until you get a good look at the chess set he cast! Beautiful work!

The crude experiments I ran in using plaster-of-Paris molds for molten aluminum did not turn out very well. Having *Ornamental*

I now know what I did wrong, and Whitmoyer makes it sound so easy (and it probably is) that I'm itching to try it again.

If you really enjoy metal casting, I highly recommend that you get this book. It will round out your abilities and enable you to cast objects that might be a whole lot easier to sell than something like indexing heads. In other words, the skills here could make you some money on the side. Excellent book! Loaded with photos and drawings. Great how-to! Get a copy! 5 1/2 x 8 1/2 paperback 92 pages Cat. no. 4430 \$8.95

**Cast decorative items!**

**Learn simple lost wax technique!**

**Possible money makers!**

# Ammen's Handbook of Sandcasting

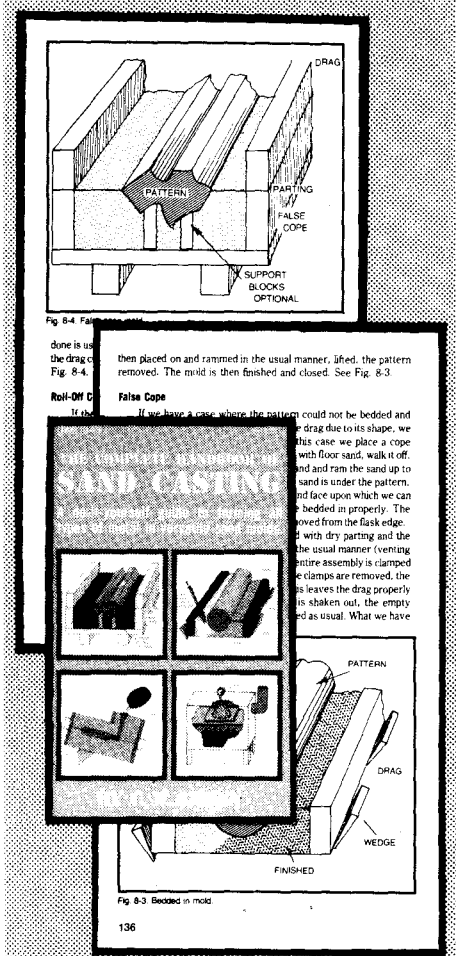
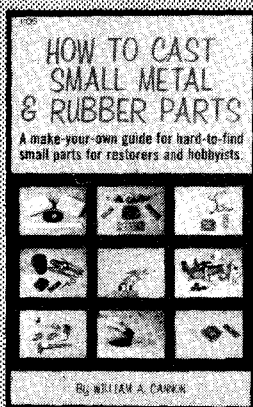
# Cast Small Metal and Rubber Parts!

**How to CAST SMALL METAL & RUBBER PARTS**  
by W. A. Cannon

Restorers of old autos and users of small, specialized castings take note! You'll find all you need to know about reproducing both metal and rubber castings right here. You'll find chapters on six casting methods, alloys, equipment you can make, molding sands, fluxes, degassers, and flasks. Learn how to make molds and pour. Learn about a remarkable rubber substitute and how to use it to make grommets, pads and stripping. Learn how to mold from damaged or defective molds. Lots more. A good book on an unusual topic. 5 1/2 x 8 1/2 paperback 144 pages

Cat. no. 117

\$9.95



## COMPLETE HANDBOOK OF SANDCASTING

by C. W. Ammen

Let Bill Ammen with his more than 35 years experience show you how to make professional castings with sand molds. Learn about molding, sand mixes, tools, mold making equipment, patterns, cores and core boxes, bench molding, floor molding, gates, sprues, risers, proper gating design, non-ferrous melting furnaces using coke, oil, and gas, and a 12 inch cupola furnace that can melt more than half a ton of cast iron per hour.

Here's solid, advanced information for the guy who wants to improve his castings and move on to more complex fields. Ammen also comments on starting a foundry business.

Good book. Thousands have already been printed and sold! 5x8 paperback 238 pages well illustrated  
Cat. no. 116 \$ 11.95

# CASTING BRASS

## CASTING BRASS

by C. W. "Bill" Ammen

Bill Ammen will teach you the important differences that make pouring brass different from aluminum, pot metal, cast iron and other metals.

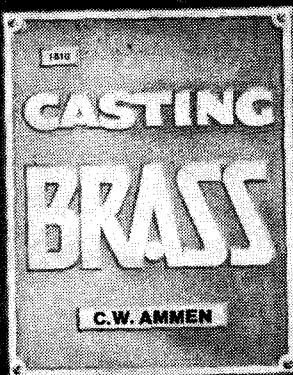
Chapters include brass or bronze, casting copper, red brass, leaded yellow brass, high-strength yellow brass, tin and leaded-tin bronzes, high-leaded tin bronze, silicon bronze and silicon brass, phosphor bronze, aluminum bronze, other red-metal alloys, common sense gates and risers, and more.

Brass is beautiful to work, but can be a pain to cast if you're not experienced. Ammen covers everything from alloy mixes and shrinkage rates to the danger of inhaling zinc fumes while melting to fluxing and deoxidizing.

It's a bit expensive, but it delivers useful information. Even if you decide not to pour brass for a while, this would be a wise addition to your foundry library. Like Ammen's other books, he does a better job of writing than the publisher does in creating an attractive book. But the information is there and that's what counts. Get a copy. 5 1/2 x 8 1/2 paperback 246 pages.

Cat. No. 1250

\$12.95





# MELT & CAST ALUMINUM



**Melting & Casting Aluminum**  
by Robert J Anderson

Buried in a stack of books was this nine hundred page volume on everything the 1925 engineer might want to know about aluminum and its application. Most of the chapters were of little use to the modern machinist but stashed in the middle were several dynamite chapters on melting and casting aluminum. Rather than reprint the whole book, we took the very best chapters.

You get five chapters on melting practice, production of secondary aluminum (in other words, recycling scrap), foundry practice, casting losses and defects, and the production of die castings with permanent molds.

There are probably newer alloys and better ways of handling them developed since this book was first published in 1925. But aluminum is still aluminum, and for the low-tech applications we generally come up with, this book gives really detailed information that is otherwise hard to find.

You'll find discussions of fluxes, refractories, ways of evaluating scrap, pouring procedures, measuring pouring temperatures, how to cure porous castings, and much, much more. And the die casting chapter covers the molds, their use, and troubleshooting. This is some of the most practical diecasting information I've run across yet.

If you pour a lot of aluminum, you should get this book. You're sure to learn something that will help your improve your work. Get a copy. Good reading. 5 1/2 x 8 1/2 paperback 253 pages  
Cat. no. 4597 \$9.95

# BRASS

## Founding

**BRASS FOUNDING**  
reprinted by Lindsay Publications

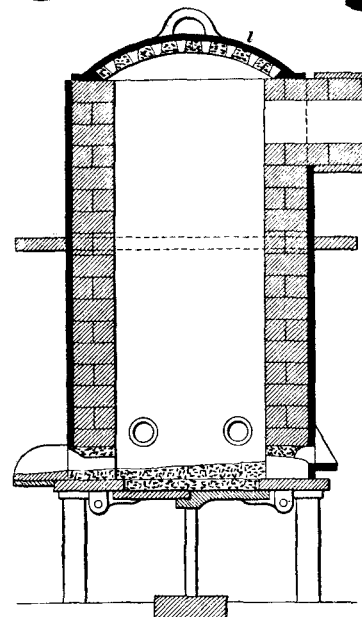
Brass! That beautiful alloy of copper and zinc! It's beautiful to machine and behold, but not always so beautiful to cast.

This reprint of a chapter from a 1903 technical school textbook will show you how casting brass is different from pouring cast-iron or aluminum.

You'll learn about the molding sand needed for brass, blackenings and partings, contraction, gating and feeding, cleaning of castings in tumbling barrels and with pickling, the crucible furnace, a simple brass furnace, brass furnace in a battery, increasing the speed of the melt, combined cupola and crucible furnace, oil burning furnaces, care of crucibles, size and capacity of crucibles and more.

You get valuable info on melting copper and old brass, adjusting and handling the crucible, precautions and prevention of oxidation during melting, use of deoxidizing fluxes, and more. You get info on all the brass alloys. And you'll learn how to grade scrap brass, borings and turnings for melting.

Great info! Not everybody needs to melt brass all of the time, but when you decide you must, make sure you have a copy of this rare information on hand. Order a copy now. 5 1/2 x 8 1/2 booklet 39 pages  
Cat. no. 868 \$4.00



# Brass Foundry

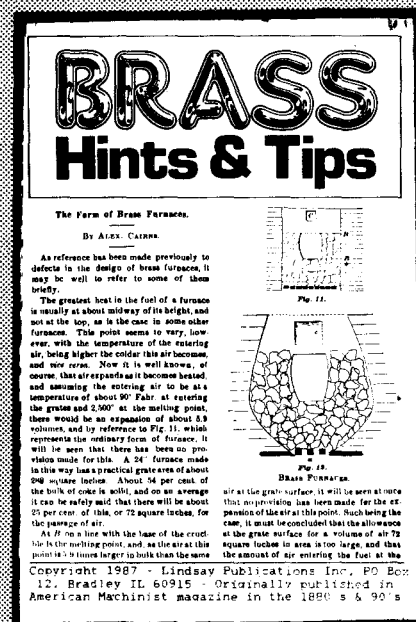
## Hints & Tips

**BRASS HINTS & TIPS**  
reprinted by Lindsay Publications

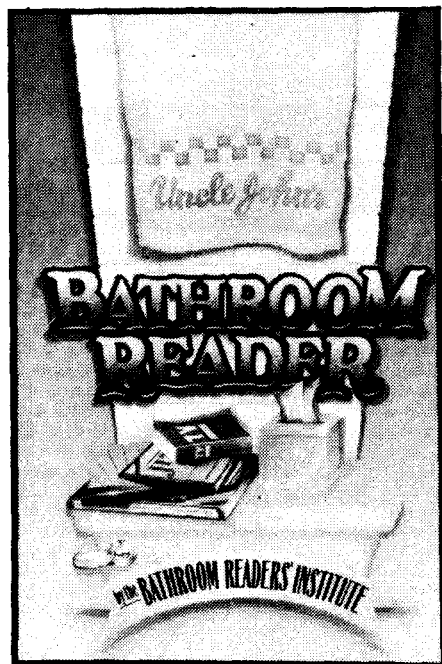
From issues of American Machinist Magazine published in 1880's and 1890's come these valuable short articles on the casting and machining of brass.

Articles include tools for working brass such as jigs for holding brass bearings while facing off in a milling machine, a jig for winding brass springs, internal threading tools for making nuts, and more. Three different articles will show you how to design and build furnaces to melt brass. Letters from readers of that era will give you tips on furnace modification and crucible care, and how to clean brass, remove sand scale, make special cores and so on.

This is information from the old-timers back when you poured your own castings and turned your own bearings. Many unusual century-old illustrations. A great low-cost scrapbook on brass. Order a copy! 5 1/2 x 8 1/2 booklet 16 pages  
Cat. no. 849 \$3.00



# Reading Too Good for the Bathroom!



## Uncle John's BATHROOM READER by the Bathroom Reader's Institute

I ordered a copy of this to see if it was good enough for the catalog. Because of the title, I didn't have very high hopes. But after I thumbed through it, there was no doubt that it should be offered.

What you get is a great collection short, medium, and long articles on entertainment, humor, education, trivia, science, history, pop culture and more. It's fascinating, entertaining reading that is anything but vulgar (as I thought it might be judging from the title).

Read about:

- the origin of common words and phrases
- the story behind "Louie, Louie"
- deadly curses and strange deaths
- politics in the Wizard of Oz
- the origin of silly putty
- Elvis's visit to the FBI
- the fabulous 60's
- rumors like worms in popular hamburgers
- A-bomb vs. your car

You don't have to sit on the can to enjoy this book. You can read it at the breakfast table, and not only that, you'll love it. Everyone who has seen it has been fascinated by it. Fun reading. Recommended. 5 1/2 x 8 paperback 224 pages

Cat. no. 6029

\$8.95

# Silver Smithing!

*Incredible handbook of rare how-to!*

## SILVER SMITHING

by Finegold & Seitz

From the dust jacket: "Silversmithing is an unparalleled work, the collaborative effort of an Old World master and his accomplished apprentice. The authors share the hard-earned knowledge of a lifetime..."

Beginning with the properties of silver, gold, copper, bronze, brass and gilding metals, the authors describe the magical transformation of a flat piece of metal into a three-dimensional object by means of thousands of hammerblows. Whether shaped by raising, sinking, stretching, forging — or a combination of methods — metal responds in a predictable manner when worked. The craftsman's understanding of how and why the metal behaves in a given way is integral to his ability to produce a handwrought object that is true to its design.

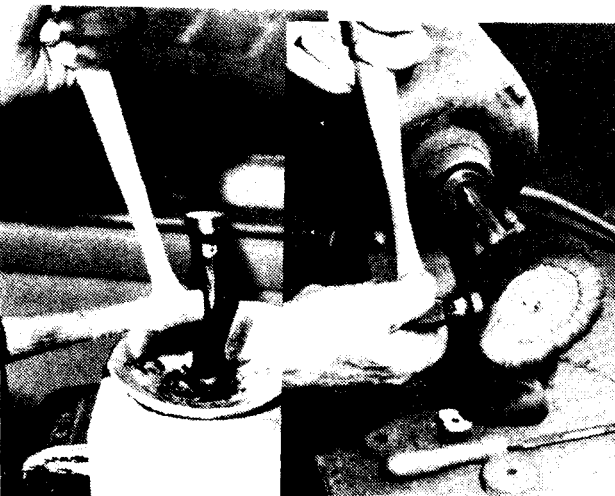
No less critical are the smith's tools. The selection and use of each for its proper job, the manner of correcting or adapting purchased tools for special needs, and custom-making hand tools are covered in great depth. Then the authors anticipate and deal with the common and uncommon problems that most metalsmithing books ignore as they discuss metal treatments: annealing, soldering, pickling, polishing, engraving, etching, oxidation and coloring.

Augmented by 700 photographs and drawings, Silversmithing moves step by step through the procedures for designing original work and translating it to metal by casting, raising, sinking, forging, stretching and construction. Works in process illustrate each method and project, with particular attention given to accessory techniques that enhance the design or complete a piece: wiring rims; making bases, spouts, ferrules, handles and hinges."

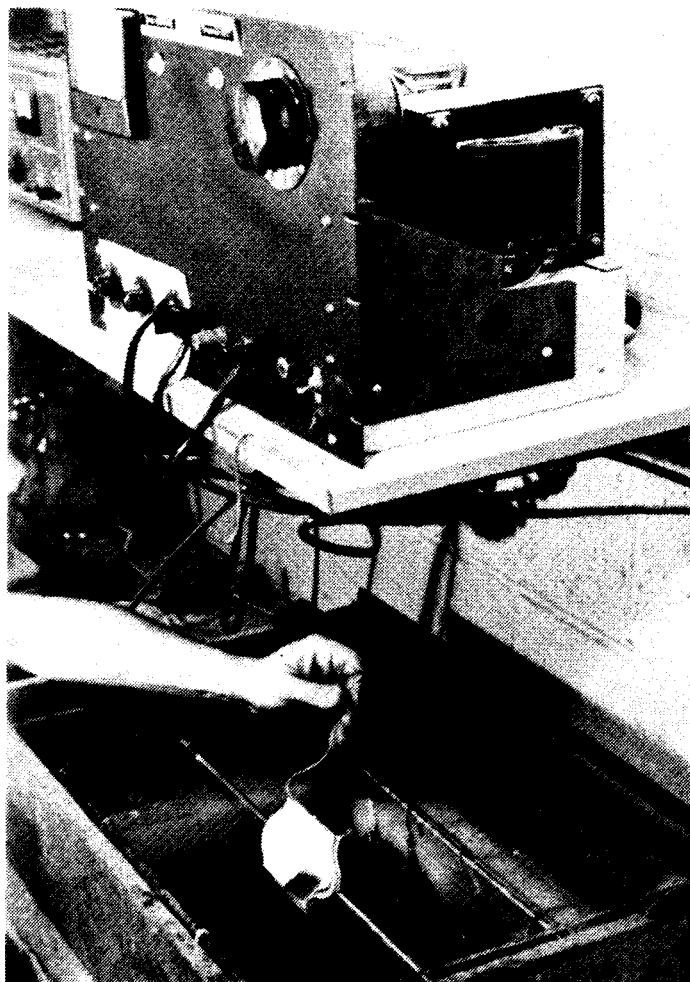
If you want to create handwrought metal objects, this is the book for you. It's expensive, but it certainly delivers. You get detailed, high quality informative text, and loads of valuable illustrations. Exceptional quality. 7 1/2 x 10 cloth 460 pages

Cat. no. 1291

\$35.00



# PLATE!



## ELECTROPLATING AND ELECTROFORMING

by Newman & Newman

Have you always wanted to electroplate, but never quite knew how to get started? Then check this out.

Here's a down-to-earth practical how-to plating book. It's written for artists who want to make sculpture and other unusual objects, but you can put the techniques to work for you in other ways.

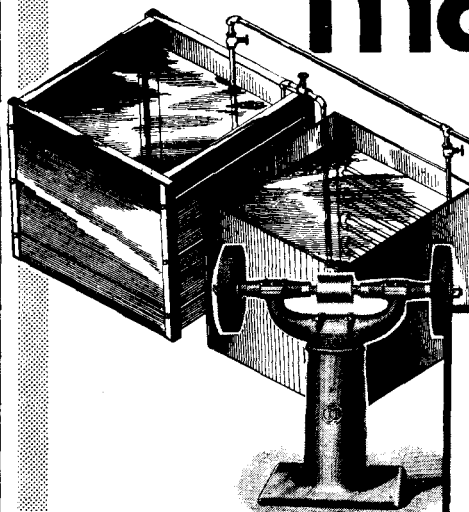
Learn how to plate copper, silver, nickel, gold, zinc, brass, German silver, green and antique golds, and brass. You get complete information on power supplies, tanks, heaters, ventilation, anodes, and surface preparation. Problems such as grain, adhesion, blistering, pitting and others are discussed in detail. Chrome plating is not covered since it requires expensive specialized equipment that makes small scale plating impractical.

You get all the facts, procedures, formulas, precautions, and the rest. It's well-illustrated, easy-to-read, and informative. In other words, it's one of the best plating books I've seen. Recommended. 6 1/2 x 11 paperback. 96 pages.

Cat. No. 153

\$9.95

# Polish & Electroplate Metals



## The Polishing and Plating of METALS



## THE POLISHING AND PLATING OF METALS

by Herbert J Hawkins

reprinted by Lindsay Publications

Just as the title says you can learn not only to polish metals to a high gloss, you can also plate them with copper, silver, gold, black or bright nickel, and even brass.

Oh, I know, you want to plate chrome. Why? To save money? By the time you buy the motor-generator set or three-phase DC supply to provide the enormous pure DC currents needed you'll be in the poor house. If you're going to invest in chrome equipment, then you're probably going to start a professional shop, and you'll need this and far more complicated books to get going. So just because this, like so many other plating books, doesn't cover chrome doesn't mean there's something wrong with it. Not at all.

What I'm trying to tell you is that this little book is old, but teaches the essentials of polishing and plating. You can turn a rough aluminum casting into an object of gleaming beauty. You can brass plate steel turnings. And a well done bright nickel plate is quite beautiful. Some people prefer nickel over chrome.

You'll learn about hydrofluoric acid pickles, a bright dip for iron, a satin finish dip, tanks and vats, making a 24 carat gold solution, silver plating without a battery, bright nickel solutions, nickel anodes, mixing copper solutions, using a lilac dip for brass, and on and on.

You'll get extensive detail on polishing equipment and techniques. Most of the equipment shown is driven by flat belts, but equipment being used today is almost identical.

Most of the extensive information in the electrical section is still true, but the equipment is noticeably obsolete, and the chapter is therefore of marginal value.

Of real concern is that plating is done with heavy metals, acids, and cyanide compounds. You run the risk of injuring yourself and others. The author recognizes some of the dangers, but the remedies he proposes are often ridiculous. Plating is always dangerous work.

The strength of this book is that the author knows what he's talking about and goes into detail about the equipment and procedures. Back in 1904 you could learn from books how to build as much of the equipment you needed as possible rather than buy it.

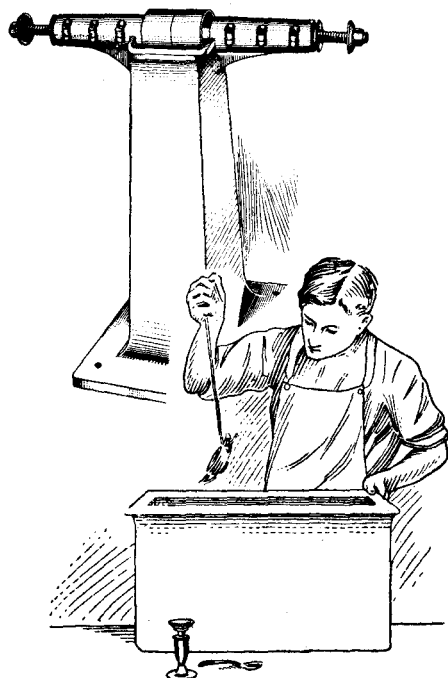
If you are now plating or intend to, consider this volume. It's like having an old timer standing next to you telling you what to look for, what to avoid, and giving you practical tips and rules-of-thumb that will help you turn out better work. Put a copy in your library.

5 1/2 x 8 1/2 paper back 355 pages

Cat. no. 4635

\$11.95

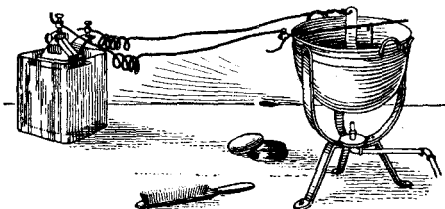
# Reetz ELECTRO- PLATING



## ELECTROPLATING

by Henry C. Reetz  
reprinted by Lindsay Publications Inc

Try electroplating! It's a useful addition to your shop skills. Here's a simple, inexpensive, well-illustrated little book that will show you exactly what you need to know to get started.



Originally published by Popular Mechanics magazine in 1911, Electroplating is brief, easy-to-read, and useful. You can be sure about that. About the only information that is really dated concerns power supplies.

Chapters include introduction, electrical equipment, shop equipment, cleaning goods before plating, copperplating, nickelplating, silverplating, goldplating, miscellaneous, first aid, and business suggestions.

You'll learn how to clean parts, polish them, mix up solutions, make tanks, and all the essentials to get going. This could very well be an easy to way to try plating. If you enjoy it, then you can launch into "heavier" texts loaded with chemistry and industrial secrets.

A great little book. Worth having. Order a copy. 5 1/2 x 8 1/2 paperback 99 pages  
Cat. no 20080 \$6.95

# Make Wax Models for Lost Wax Casting

MODELING IN WAX  
for Jewelry &  
Sculpture  
by Lawrence  
Kallenberg

Lost wax casting is a powerful technique for producing precision metal castings, and you'll find a number of books covering the process. But where do you find a book explaining how to carve the wax? Right here!

The author draws on twenty years of experience to explain the process of lost-wax casting, the equipment, wax models from molds, carving blue and purple wax, carving green wax, wax build-up, sheet and rod wax, accidental effects, special-

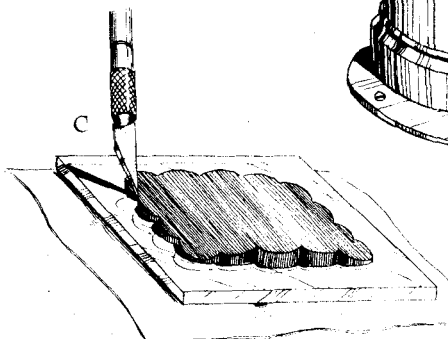


ized wax techniques, and finishing the metal model.

All of this, of course, is designed for making intricate jewelry. You'll learn how to carve stock wax shapes into a diagonal dome ring, or a pendant with stone, a rose pin, a free form pin and more.

Even if you're not intending to cast precious metal jewelry,

the lessons taught here will help you produce intricate machine parts and works of art. It's a well illustrated book, nicely written, and although it's a bit expensive, it delivers rare information. This is an essential book for the lost-wax craftsman. Consider it carefully. 7x10 hardcover 252 pages  
Cat. no. 1290 \$27.50



# Chemical Cross Reference!

Convert old-fashioned chemical names into  
modern names! More than 2000 entries!

Lindsay's  
CHEMICAL CROSS REFERENCE  
by Lindsay Publications Inc

If you haven't run into the problem yet, you will. You'll be reading some old chemical formula calling for mirbane oil, salt of satum, or liver of sulphur. A quick check of this handy list of chemical terms would tell you that you need nitrobenzene, lead acetate, or potassium sulphide.

What we did was enter into our computer two thousand chemical equivalents gleaned from a variety of chemistry textbooks, industrial references, and formularies in our reference library dating back to the early 1800's. We asked the com-

puter to merge all of the lists and sort them into alphabetical order. The result is a chemical cross reference.

We have kept unusual and probably-incorrect spellings. We have made no attempt to verify that the definitions are correct. What we have done is provide you with one master list of the best equivalents we could find. We've already found it useful, and you will too. Get a copy for your reference library. 5 1/2 x 8 1/2 paperback 44 pages  
Cat. no. 20170 \$4.95

# Contents

**Division I — Chemical Metallurgy; Alloys; and Preparations Made and Obtained from Metals.**  
 Iron; Pig or crude iron; Malleable, bar or wrought-iron; Steel; Iron Preparations; Cobalt; Nickel; Copper; Preparations of Copper; Lead; Preparations of Lead; Tin; Preparations of Tin; Bismuth; Zinc; Preparations of Zinc; Cadmium; Antimony; Antimonial Preparations; Arsenic; Quicksilver or Mercury; Preparations of Mercury; Platinum; Silver; Gold; Manganese and its preparations; Permanganate of Potassa; Aluminum; Magnesium; Electro-Metallurgy

**Division II — Crude materials and products of chemical industry**  
 Carbonate of Potassa; Saltpeter, Nitrate of Potassa; Nitric acid; Technology of the Explosive Compounds — gunpowder, and the chemistry of fireworks or pyrotechny; Nitroglycerine; Gun-cotton; Common salt; Manufacture of Soda — native soda; Soda from plants or soda-ash; Soda Prepared by Chemical Processes; Preparation of Iodine and Bromine; Sulphur; Sulphurous and Hyposulphurous Acid; Manufacture of Sulphuric Acid; Sulphide of Carbon; Hydrochloric Acid and Glauber's Salt, or Sulphate of Soda; Bleaching Powder and hypochlorites; alkalimetry; Ammonia and ammoniacal salts; Soap making; Boric or boracic acid, and borax; Production of alum, sulphates of alumina, and aluminates; Ultramarine

**Division III — Technology of Glass, Ceramic Ware, Gypsum, Lime & Mortar**  
 Glass manufacture; Ceramic or earthenware manufacture including hard porcelain, tender porcelain, stoneware, Fayence ware, common pottery, brick and tile making; Lime and lime-burning; Mortar including common or air-setting mortar and hydraulic mortar; gypsum and its preparation

**Division IV — Vegetable Fibers and Their Technical Application**  
 Hemp; Cotton; Paper making — hand paper, machine paper, pasteboard and other paper; Starch; Sugar manufacture; Cane Sugar; Beet-root; sugar; Grape sugar; Fermentation; Wine-making; Beer-brewing; preparation or distillation of spirits — preparation of vinous mash and distillation of the vinous mash; Bread baking; Manufacture of vinegar; Preservation of wood; Tobacco; Technology of essential oils and resins; Cements, lutes and putty

**Division V — Animal Substances and Their Industrial Application**  
 Woollen industry; Silk; Tanning; Glue Boiling; Manufacture of Phosphorus; Requisites for producing fire; Animal charcoal; Milk; Meat

**Division VI — Dyeing and Calico Printing**  
 Aniline colours; Carbolic Acid colours; Naphthaline pigments; Anthracen pigments; Pigments from Chinchonine; Red Pigments occurring in plants and animals; Blue dye materials; Yellow dyes; Bleaching; Dyeing of spun yarn and woven textile fabrics; Printing of woven fabrics

**Division VII — Materials and Apparatus for Producing Artificial Light**  
 Artificial light from candles; Illumination by means of lamps; Gas; Paraffin and solar or petroleum oils; petroleum

**Division VIII — Fuel and Heating Apparatus**  
 Fuel; Wood; Peat; Carbonized peat; Brown-coal; Pit coal or coal; Petroleum as fuel; coke; artificial fuel; gaseous fuel; heating apparatus; heating dwelling houses; boiler heating and consumption of smoke

# Handbook of Chemical Technology

**HANDBOOK OF CHEMICAL TECHNOLOGY 1872**

by Rudolf Wagner

translated by William Crookes

reprinted by Lindsay Publications

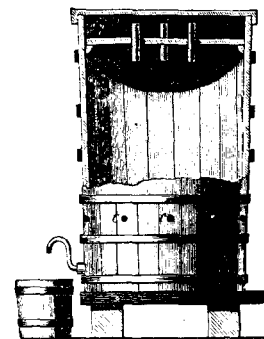
In the 1870's a technological revolution was sweeping the US and Europe. Although the Americans were tops in mass production, it was the German chemists who lead their field. The master reference for chemists the world over was *Wagner's Handbook*. This 1872 translation of the eighth German edition can be yours for much less than an original copy should you be able to find one.

And what a book it is!

If you're looking for information on early and/or simple ways of making chemicals, refining metal, formulating glue, paper, dyes or just about anything else chemical in nature, this is the reference for you. I have never seen such a comprehensive collection of incredible technological detail in a single volume anywhere else.

Want to refine iron ore into steel? Want to make sulphuric acid? And use it to make nitric acid? And use it to make explosives? Care to brew beer? How about a batch of whiskey? A loaf of bread? And on, and on, and on. You can see from the table of contents that this is a whole encyclopedia in a single volume — 745 pages of small type with 336 illustrations mostly of the apparatus used in manufacturing the products described.

This is not really a cookbook. You won't find step-by-step instructions. But you will find more detail on a wider variety of basic essential processes, many of them made obsolete by more complicated processes, than in any other volume. I can't help believe that if you're investigating the possibility of tanning hides, making illuminating gas, making charcoal, making soap, or any-



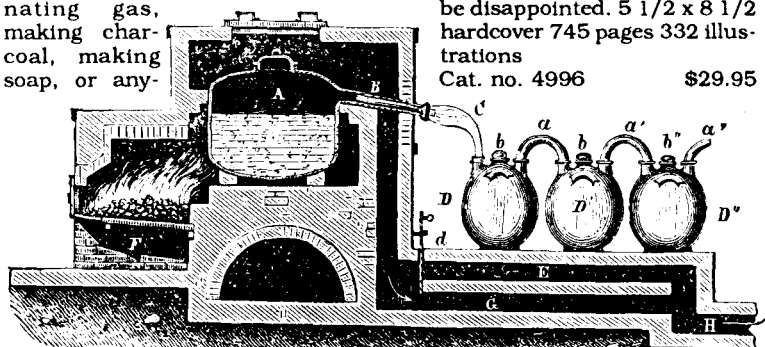
**Absolutely Incredible 1872 Technical How-to!**

thing else that this single volume can provide more information in less time than searching through most libraries for a month of Sundays.

You'll see hundreds of illustrations of equipment along with enough detailed information on its construction and use that you should be able to begin experimentation, or at least decide if your idea is worth pursuing.

Yes, this is an expensive volume. The price reflects the cost of reprinting a small number of this classic reference. But you get more than what you pay for. This is quality. Today we have sophisticated, hi-tech processes that are closely guarded industrial secrets. Here you learn how it was done before large corporations and PhD chemists took over production. Be warned, though. This is old world thinking. You run the risk of poisoning yourself. These methods can be and probably are dangerous.

This incredible classic text will definitely fill a void in your reference library. I've never seen anything like it. And it's almost a sure thing you haven't either. It's expensive, but it's worth every penny and then some. Order a copy. You won't be disappointed. 5 1/2 x 8 1/2 hardcover 745 pages 332 illustrations  
 Cat. no. 4996 \$29.95







# DROP FORGING

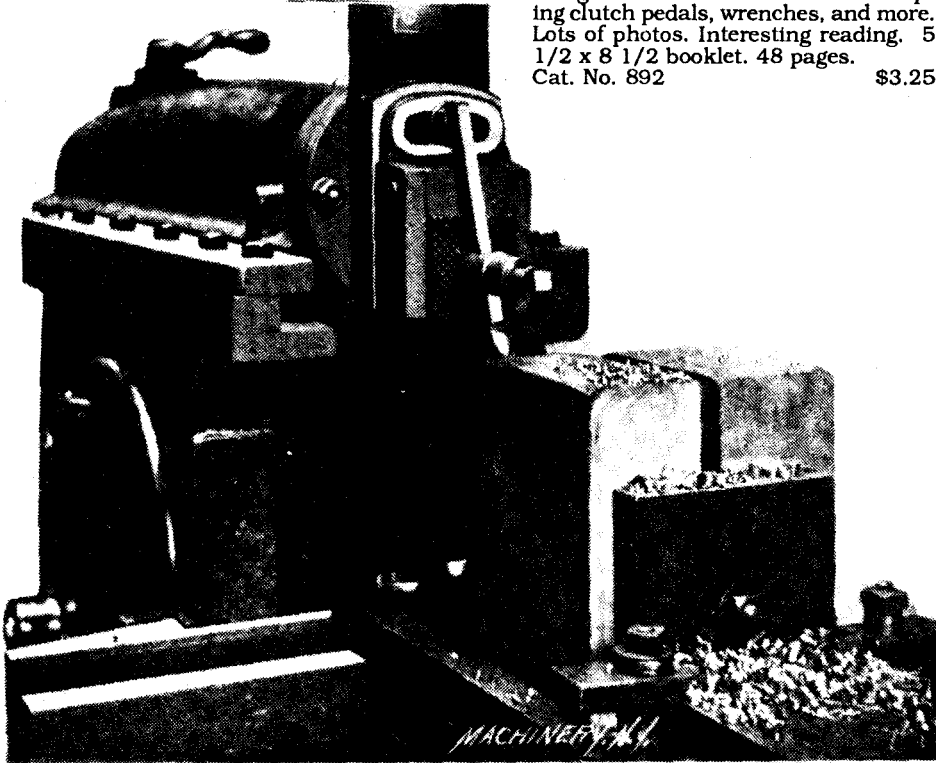
**DROP FORGING**  
**Machinery Reference series No. 45**  
*reprinted by Lindsay Publications*

Learn how a drop forging plant was laid out back in 1909 — where the drop hammers, machine tools for building dies, and the heat treat furnaces were located and connected into overhead line shafts, brine lines and so on. You'll see details of brine tanks, forges and tempering furnaces. The section on "Drop and Stamped Forgings" will reveal details about the dies for stamping levers, punching holes, forming crane hooks, and more. "Making Drop Forging Dies" briefly discusses the technique. And "Foundations for Drop Hammers" are briefly discussed.

You'll visit an automobile factory in "Drop Forging Dies in an Automobile Shop" to see dies being made and heat treated for stamping clutch pedals, wrenches, and more. Lots of photos. Interesting reading. 5 1/2 x 8 1/2 booklet. 48 pages.

Cat. No. 892

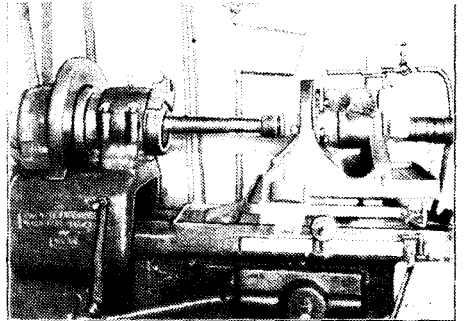
\$3.25



# Auto Manufacturing



Fig. 7 The Body Trimming Department



**AUTOMOBILE MANUFACTURE**  
**Machinery Reference Series No. 59**  
*reprinted by Lindsay Publications*

Go back to the auto factories of 1910, just as the industry was taking off. See the tool making department with all the belt driven lathes, the chassis drilling and milling department, gear cutting room, engine testing room, views of early single and four cylinder engines, transmissions, and more. See the equipment for drilling and reaming cam shafts, boring cylinders, turning pistons, assembling autos. Visit the case-hardening room where gears are finished, and more.

Loaded with photographs. Interesting info on mass production techniques when almost anyone could still make autos profitably. In other words, this factory could have been yours! Good reading! 5 1/2 x 8 1/2 booklet. 47 pages

Cat. No. 894

\$3.25

# Lathe & Planer Tools

**LATHE AND PLANER TOOLS**  
**Machinery Reference Series No. 7**  
*reprinted by Lindsay Publications*

Learn about "Cutting Tools for Planer and Lathe" — the basic information about grinding and setting tools that every machinist should know.

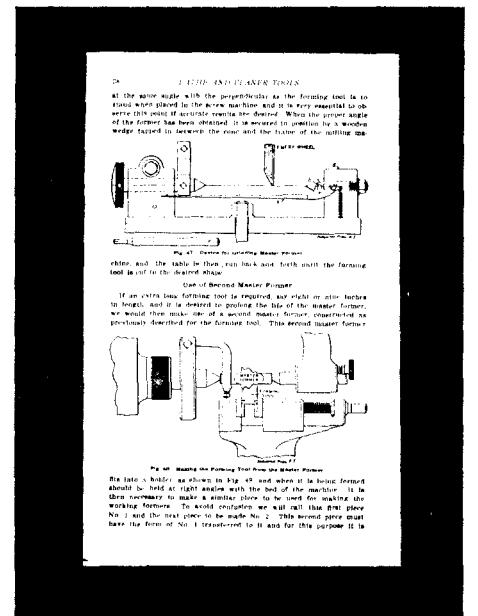
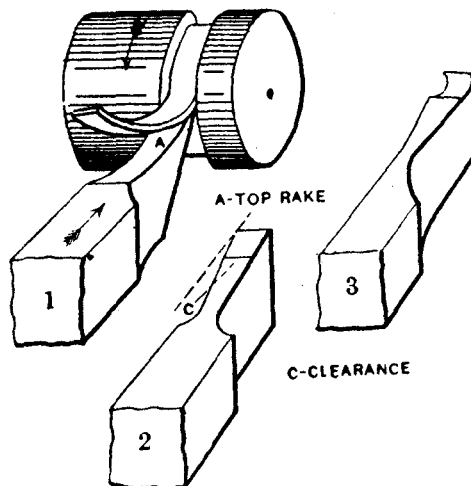
"Boring Tools" will show you some of the methods in use in 1908 that just might solve a shop problem that you'll encounter soon.

"Shape of Standard Shop Tools" discusses just that — the best shapes for the particular job. Numerous illustrations will reveal shapes, the desired rake, length of shank and how these details affect the tool performance.

Finally, explore an unusual section on "Straight and Circular Forming Tools". Learn how to calculate dimensions and build the tools. Great information — a mixture of basic and unusual info low price. Order a copy. 5 1/2 x 8 1/2 booklet. 40 pages.

Cat. No. 893

\$2.95

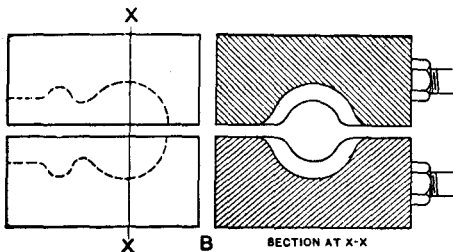
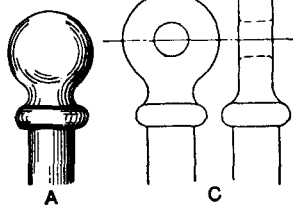
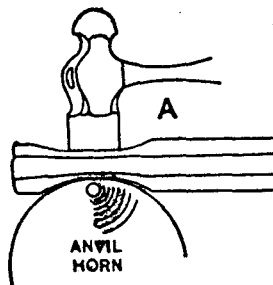
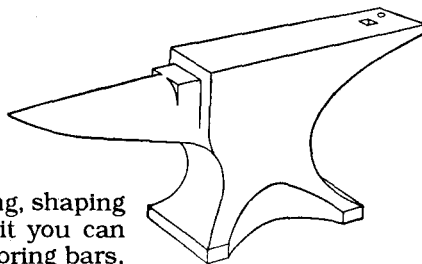


# Elementary Forge Practice

**ELEMENTARY FORGE PRACTICE**  
by John L. Bacon  
reprinted by Lindsay Publications

Forge practice is metal working at its most basic level: heating, shaping and hardening. With it you can turn steel stock into boring bars, pliers, hammers and other useful tools, all being custom designed to your own specific needs.

Chapters include a general description of forge and tools, welding, calculation of stock for bent shapes, upsetting, drawing out, bending, simple forge work, cal-



ulation of stock and making general forgings, steam hammer work, duplicate work, metallurgy of iron and steel, tool-steel work, tool forging and tempering, and more. You get a

number of tables and many pages of plans for useful learning projects: forge shovel, poker, C-clamp, bolt tongs, cold chisel, center punch, lathe cutting tools, scraper, hammers, and more.

You can make hammers, harden the faces, use a steam hammer with jigs and dies to make duplicate work, forge and grind lathe tools and much more. You learn skills that can save you money.

If you're new to forge practice and/or blacksmithing, order a copy of this. You'll like it. 5 1/2 x 8 1/2 paperback 288 pages

Cat no. 4457

\$9.95

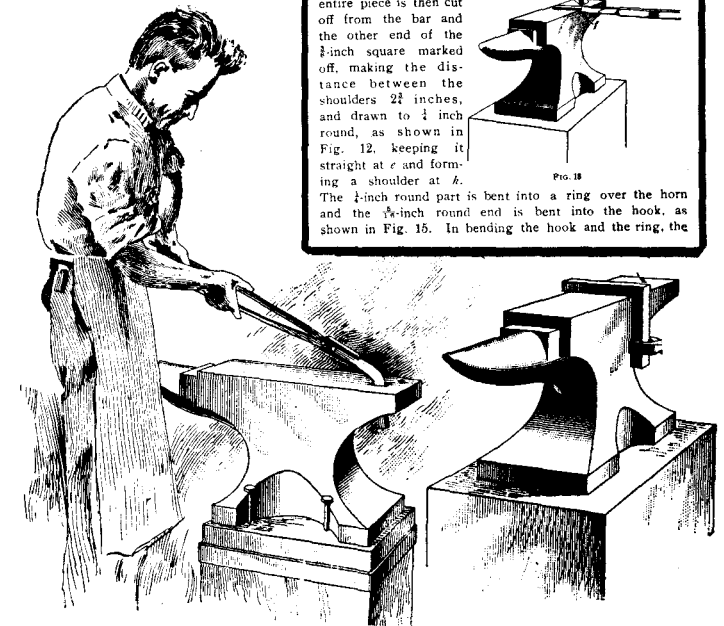
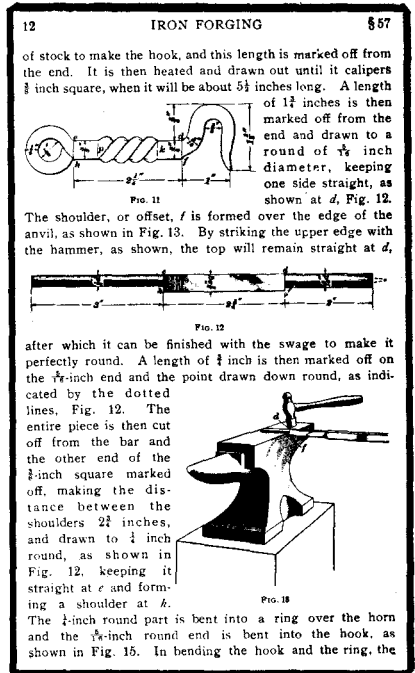
# Blacksmith Shop & Iron Forging

**BLACKSMITH SHOP AND IRON FORGING**  
reprinted by Lindsay Publications

Blacksmithing is the forging of iron with simple tools — the same forging process carried on today with enormous presses and dies.

There are a great many books that will show the usual blacksmithing projects, but have you ever made a bolt head by welding on a ring? Have you made a rocker arm? How about a steam locomotive reverse shaft? Or a rudder frame?

Besides these rare



topics, you get a complete discussion of blacksmith shop equipment: the forge, tuyeres, bellows, hood, chimney, fuels, anvil, all types of hammers, chisels, and all the rest.

The second part will teach you about the making of cast and wrought iron and basic operations of forging. You'll make an eye hanger, gate hook, and other educational projects. You'll learn how to weld and make a small chain and tongs.

Today blacksmithing is almost a fine art. In 1906 when this was published, blacksmithing was a machine shop skill needed in day-to-day operations. This is a technical school textbook that will teach you the basics or some new tricks if you're an old hand at smithing.

An excellent book with great illustrations. Great info for the money. Fun to read. A really nice book. 5 1/2 x 8 1/2 paperback 96 pages

Cat. no. 4074

\$6.50

# The Modern Blacksmith



## THE MODERN BLACKSMITH by Alexander Weygers

Weygers is a mechanic, machinist, artist, and blacksmith. He's incredibly talented and in this top rate book, he teaches you some of his skills.

Learn how to set up a blacksmith shop and the proper way of hammering, tempering and hardening high-carbon steel. Learn basic skills such as straightening, tapering, shaping, and using a vise. Then make your own tools, hinges, fireplace poker, tongs, door latches, pliers, wrenches, and other tools of your own design.

Weygers himself drew the 600 top quality detailed drawings that are jammed into the 96 pages of this book. The illustrations make this book come alive.

Make a small anvil from a piece of railroad track. Make stone cutting tools and wood carving gouges. Make hex wrenches. Learn to make milling cutters, standard hex head bolts, and more.

One look at this book, and you'll want to try your hand at blacksmithing. Weygers makes it look easy and so much fun. I'm sure it is once you've mastered the lesson taught here. If you like to work metal and don't already have a copy of this book, then order one now. It's worth having. Top rate. 8 1/2 x 11 paperback 96 pages

Cat. no. 185

\$11.95

# Making of Tools

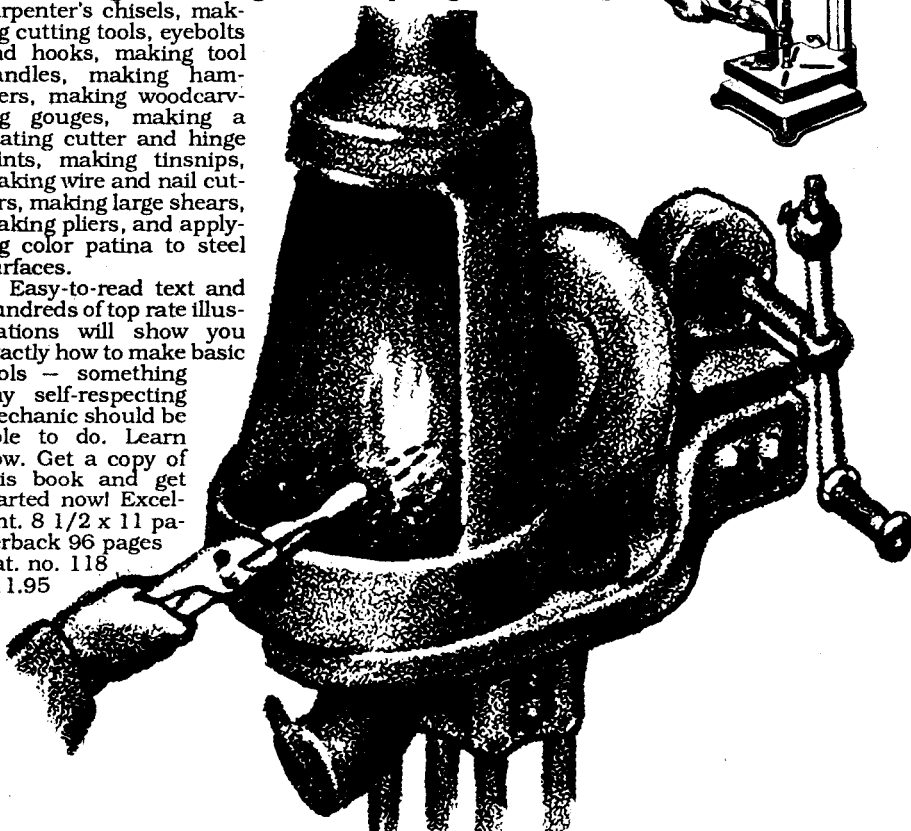
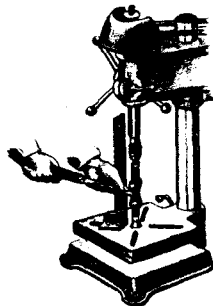
## THE MAKING OF TOOLS by Alexander Weygers

"This book teaches the artist and craftsman how to make his own tools: how to design, sharpen, and temper them using only basic shop equipment and scrap steel."

Chapters include: a beginner's workshop, tempering steel, making a screw driver, making a cold chisel and other simple tools, making stonecarving tools, sharpening tools, making carpenter's chisels, making cutting tools, eyebolts and hooks, making tool handles, making hammers, making woodcarving gouges, making a seating cutter and hinge joints, making tinsnips, making wire and nail cutters, making large shears, making pliers, and applying color patina to steel surfaces.

Easy-to-read text and hundreds of top rate illustrations will show you exactly how to make basic tools — something any self-respecting mechanic should be able to do. Learn how. Get a copy of this book and get started now! Excellent. 8 1/2 x 11 paperback 96 pages

Cat. no. 118  
\$11.95

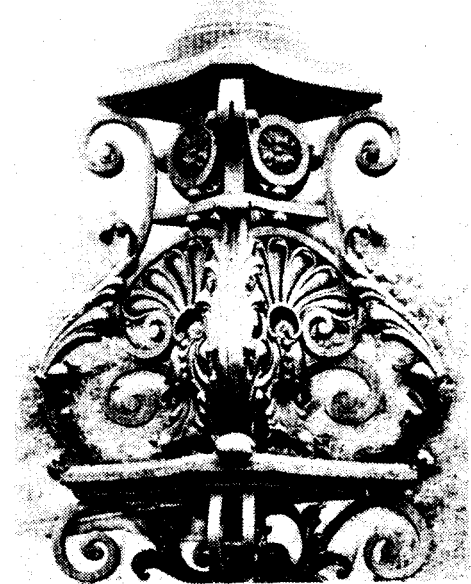


# Art Nouveau Decorative Ironwork



## Art Nouveau DECORATIVE IRONWORK edited by Theodore Menten

If you've run out of ideas for blacksmithing projects, then you should have this. You get 137 photographs of fantastic



turn-of-the-century art nouveau ironwork with all its fancy flowers and wild decorative motifs. Most the photos were taken in Brussels and Paris by a variety of photographers. This is a must-have book for the blacksmith's reference library. Get a copy. You'll like it. 8 1/2 x 11 paperback 128 pages

Cat. no. 1217

\$7.95

[illegible]

Nicely done. I'd like to offer more books like this. Rare information. I think you'll like it. 8 1/2 x 11 paperback  
80 pages  
Cat. no. 2010 \$16.00

Interesting reading. Essential to round out the blacksmithing library. Get a copy. 5 1/2 x 8 1/2 paperback 202 pages  
Cat. no. 4848 \$9.95

# Basic Metalworking

# Stay Alive in the Woods!

**HOW TO STAY ALIVE IN THE WOODS**  
by Bradfore Angier

"For over twenty years, sportsmen, hunters, and camping families have been carrying this book with them every time they venture into the woods. It is a life-saving tool which details all of nature's resources and shows — in 26 clearly written, illustrated chapters — how to find food, water, warmth, and shelter when lost or stranded.

OVER 600,000 COPIES SOLD

## HOW TO STAY ALIVE IN THE WOODS

A complete guide to food, shelter, and self-preservation that makes starvation in the wilderness next to impossible!

**BRADFORD  
ANGIER**

The book is full of secrets that can help save time, energy — and even lives. For example, it tells: how to spark a fire by using a drop of water as a lens; how to obtain meat and fish by primitive means; and how to protect yourself against natural hazards..."

That pretty well says it. This "drug-store" paperback is wall-to-wall practical tips and how-to. Lots of quality information for a low price. 4 x 7 mass paperback 285 pages.

Cat. No. 682

\$4.95

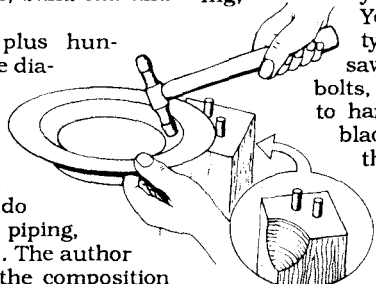
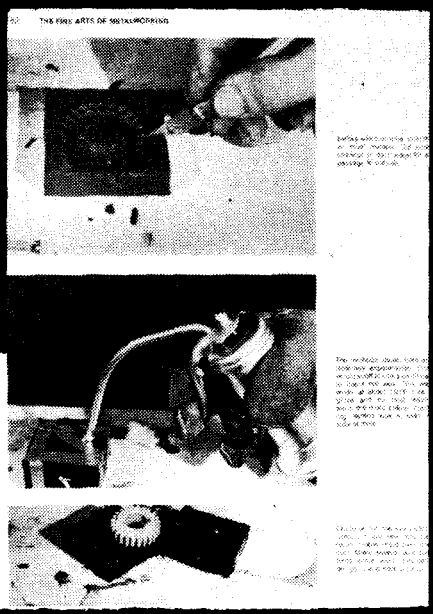
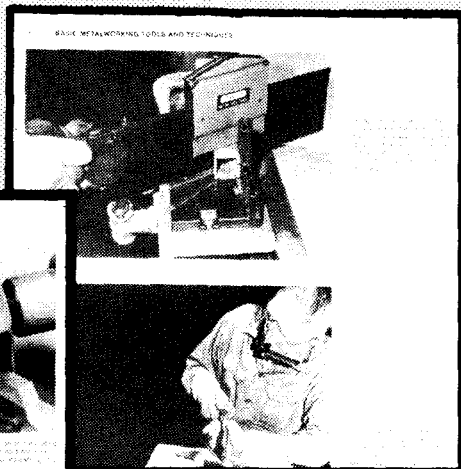
## METALWORKING IN THE HOME SHOP

by E. F. Lindsley

From the back cover:

"Here is good news for every do-it-yourselfer — a complete course that brings metalworking into the home shop with vital tips on everything from engraving jewelry, trophies and name plates by hand and casting lost-wax molds to heavy metalworking, including to choose and use a bench grinder, drill press, band saw and metal lathe.

Detailed instructions plus hundreds of photos and precise diagrams explain all the techniques tools and materials. Even a beginner can master the basics of cutting drilling, bending, soldering and brazing metals to do home repairs, rethread piping, forge tools, and sculpt art... The author pays special attention to the composition and production of metals (and how to identify them) and offers complete plans and guidelines for building such useful and decorative metal projects as a brass log basket, copper hood for a fireplace or stove, weather-cock, wrought-iron porch railing, metal chessmen and more..."



If you're just starting out in metalworking, you may want a copy of this.

You'll learn everything from types of vises, using a hacksaw, different kinds of bolts, nuts and rivets all the way to hand engraving lathes, and blacksmithing. Compared to the other books in this catalog, the information is relatively simple and shallow, but on the other hand, you'll learn about the broad range metal working techniques

that you wouldn't get from other books.

Excellent book in its class. Well illustrated. Consider it carefully. 7 1/2 x 10 1/2 paperback 309 pages

Cat. No. 1289

\$14.95



# Build a Forge!

**How to  
BUILD A FORGE**  
by David Wimberley

Soyou're gonna pound iron, huh? I assume you already have an anvil, some hammers and tongs, and huge biceps. You're gonna need a forge. After all, no matter how big your biceps may be, if that iron ain't hot, you can't work it!

Let Dave Wimberley show you how to take a standard water heater shell and vacuum cleaner and convert it into a quality blacksmithing forge for very little money. This 20" diameter firebrick-lined design requires no welding and has a hood that with careful installation will allow you to operate the forge indoors without affixiating yourself.

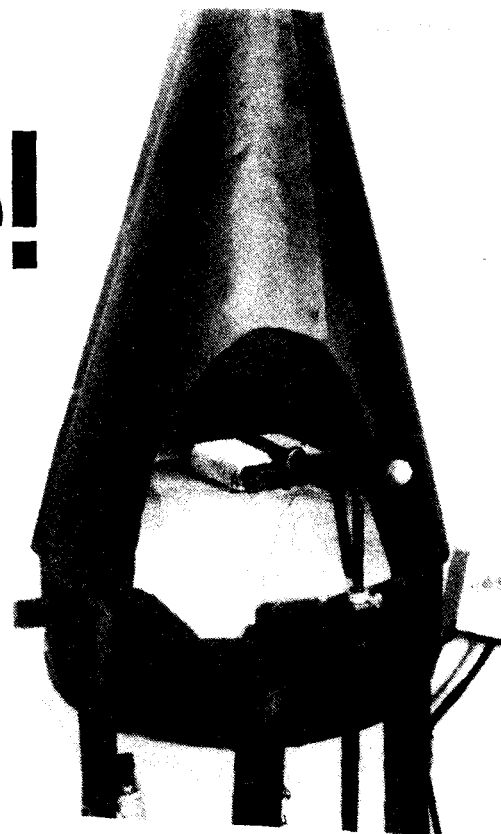
Dave will show you how to use standard plumbing fixtures to pump in the air blast. He'll show you how to line the steel basin with firebrick and

how to lay out the conical hood. He'll even show you how to make a refractory fire cover that makes the forge safer and more convenient to use. The only special tool you'll need is an abrasive cutoff blade for your power circular saw.

Here's an excellent proven design presented in an easy-to-understand fashion with excellent drawings and photographs. If you're itching to set up a blacksmith shop and pound iron, get a copy of this before you buy or build any forge. It's well worth the price. Excellent booklet. Order a copy today. 5 1/2 x 8 1/2 booklet 15 pages

Cat. no. 845

\$4.50



# Methods for Modern Sculptors

**Methods For MODERN SCULPTORS**  
by Young and Fennell

Sculptors will find this valuable, but I really include this book because of the valuable how-to it provides everyone who's interested in lost-wax casting.

Great book! Includes: waxes and sprues, mold making, ceramic shell casting, dewaxing, the melt and the pour, chasing and cleaning, polishing and patination, patinas for metal, plus lists of suppliers, books and more.

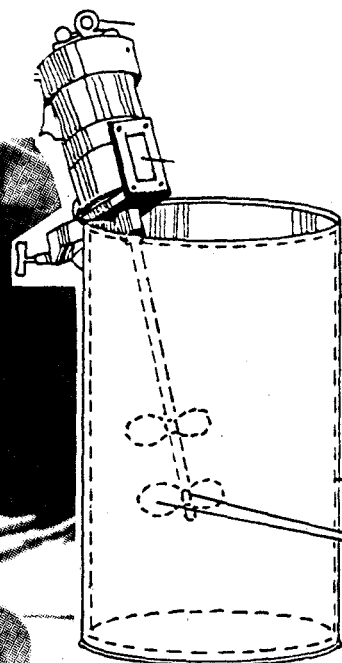
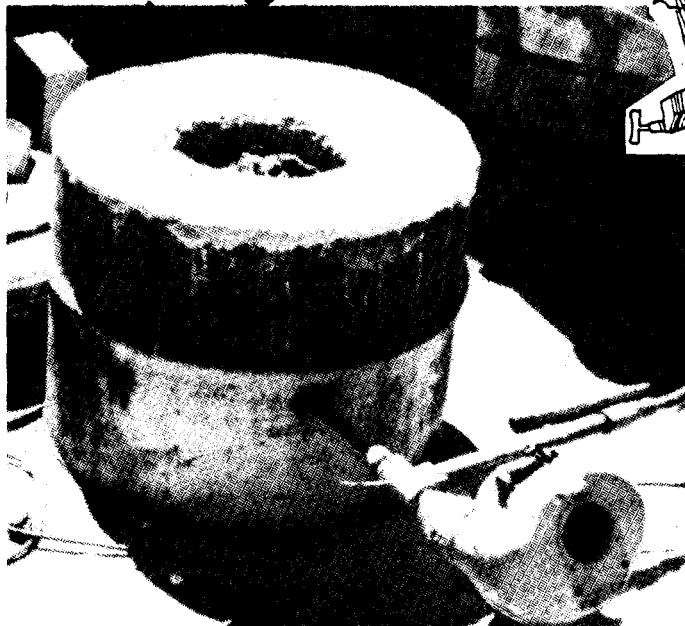
Very little is left to the imagination. You get plans for furnaces, valves, burners, techniques for spruing, venting, and all the rest. You get many, many formulas for patination (coloring) of the final casting. Sculptors work in bronze (close relative of brass) but there is mention of other metals too.

Well done book. If you're into lost wax, get this. If you're interested in general foundry, consider it. It covers much of the same material as other books, but every book is a little different. A little bit on the expensive side, but generally worth it. 5 1/2 x 8 1/2 paperback. 294 pages.

Cat. No. 1257

\$14.95

## Lost Wax Bronze Casting & More!



# RESTORE Machine Tools to their original accuracy!

**MACHINE TOOL RECONDITIONING  
and Applications of Hand Scraping**  
by E.F. Connelly

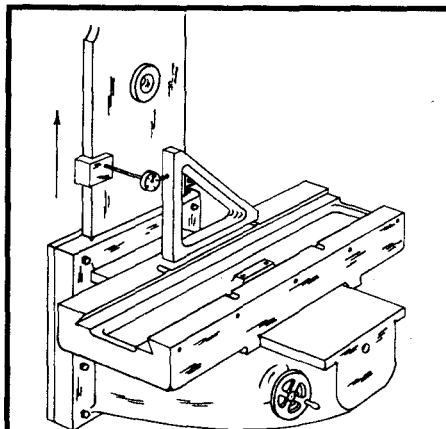
Not long ago I went to an auction held by the local school district to unload used equipment including half a dozen small lathes. They sold in the low \$200's which most people thought was too much. But had I known that this book existed, I probably would have bought one of those beat up lathes. Even though they looked like they had spent the last 20 years in the ape house at the zoo, using this book I could have brought them back to perform like new with dead-on accuracy.

You'll learn how to recondition lathes, grinding machines, horizontal and vertical milling machines. You say you can pick up a milling machine for a song? But it's worn? Pay the song, follow the instructions in this book, apply elbow grease liberally, and you'll have a top notch machine.

Chapters include: hand scraper, manipulating scraping tools, bench oil

stones, how to make a surface plate, straight edges, marking mediums, squares, levels, test bars, dial indicator, gibs and their adjustment, grooves, hints on routine, frosting techniques, automatic generation of gauges, factors in reconditioning, surface bearing requirements of slides and ways of precision grinders, problems in alignment, and individual chapters on the lathe, horizontal milling machine, vertical milling machine, cylindrical grinding machine, and surface grinding machine.

You'll find many illustrations, mostly showing how to set up combinations of plates, straight edges and dial indicators to check the accuracy of the



**Recondition lathes,  
milling machines,  
grinders, more!**

equipment so that you know where to scrape it into truth.

These are same techniques used by Maudslay, Whitworth and other early

precision machinists to build their own lathes. Rare information.

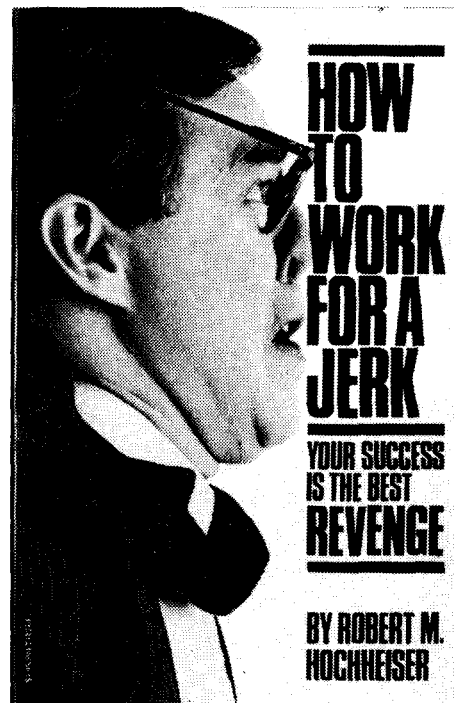
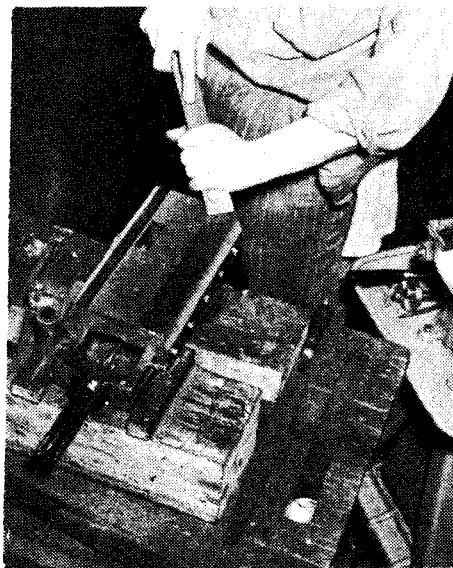
You might even consider setting up a business rebuilding machine tools. Or maybe you might even want to build custom machine tools. Certainly, the lessons learned here should be applicable to many other precision machines.

The price is high, but you get detailed, rare information. I'm

quite impressed. A great reference! When your lathe or milling machine starts acting up, pull this book off the shelf and find out what the trouble is! No machinist should be without a copy. A dynamite book! 8 1/2 x 11 hardcover 533 pages well illustrated.

Cat. no. 1141

\$36.50



**HOW  
TO  
WORK  
FOR A  
JERK**

**YOUR SUCCESS  
IS THE BEST  
REVENGE**

**BY ROBERT M.  
HOCHHEISER**

## HOW TO WORK FOR A JERK

by Robert M Hochheiser

Whenever someone new hires in here, I give them a handful of Vallium and a copy of this book. After ten minutes with me, they're usually so bewildered they've swallowed the book and are reading the capsules!

Chapters include they do it on purpose; the cast of characters, dilettantes, fops, experts and other meatheads; corporate dinosaurs; inhuman resourcefulness; politics; if you're also a boss; and it's only a job.

*"Do you think of your boss as a grade A unadulterated jerk whose brains are on vacation? Does he act like a world class bozo who would get the Nobel Prize in bungling if there were such an award? Has he given you the impression that his concept of developing a good idea is cooking up some preposterous reason for denying you a raise?"*

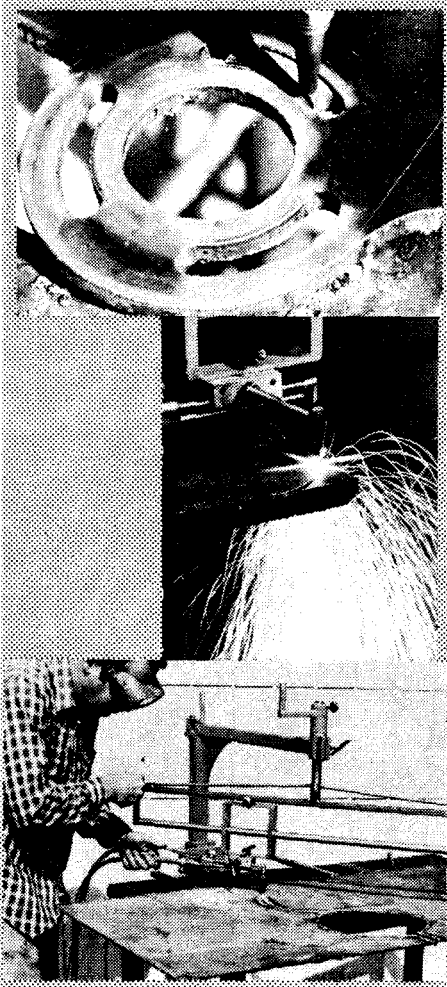
I once worked for people like that, and I'm sure you have too. Get even. Work around them and be successful. Some of my past employees swear I'm in this book, but they're the ones with my foot print on their rear ends, a result of their inattention to our customers' needs.

I wish I had had this book years ago. I could have counterattacked and achieved success much earlier. And I could have watched those jerks hang themselves and slowly twist in the wind.... Good reading. Useful. Get a copy. 5x8 paperback 227 pages

Cat. no. 747

\$5.95

# You can build a Radial Arm Flame Cutter!



**How to build a  
RADIAL ARM FLAME-CUTTER**  
by Richard Walker

You can use this flame cutter to make perfectly straight, exact right angle, or bevel cuts in thick steel plate. You can cut perfect circles although freehand spotting of the center takes a little time. About the only bad thing is that you won't get a dead smooth cut like you would with a motor driven unit, but then this unit only costs from \$15 - \$100 to build!

This will take some skill to build: cutting, drilling, tapping, welding and some machining. This project is meant for professionals, so it could be tough for raw beginners. You get excellently drawn plans, great how-to and lots of photos. Great addition to the well-equipped shop. 7 x 9 booklet, 20 pages.

Cat. No. 1255

\$8.95

# Turn Metal on a Simple Lathe!

**TURNING METAL on a  
Simple Lathe**  
by John F. Malloy

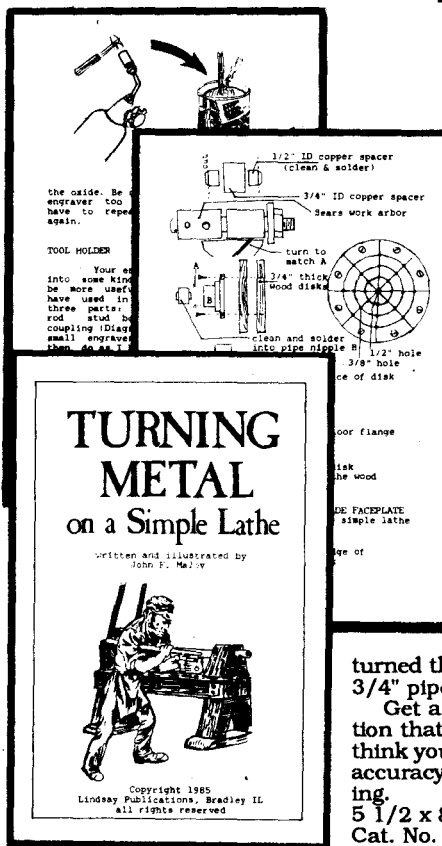
Turning metal is easy on a modern, expensive metal lathe. Anyone can do it. But have you tried turning metal on a simple lathe such as a wood lathe?

Who would be crazy enough to try that? An expert blacksmith for one. And you'd be surprised at what can be done.

Malloy will show you how to make a cutting tool, temper it with a propane torch, sharpen it, make the first pass, the second pass, finish it up, cut high carbon steel, and make additional gravers.

Illustrated but less well described are constructions of a bell chuck and a face plate.

Malloy explains: "The only qualifications that I have is 19 years of general blacksmithing experiences and a terminal case of tinkering." He's made flintlock rifles, tools, and irons, and much more. He first saw free-



**Simple  
lathe,  
incredible  
results!**

hand turning performed by an expert blacksmith. Since then, Malloy has used the technique to make steam engines, small airplane engines, and a muzzle loading barrel rifling machine. He has also managed to bore a hole 44" deep free hand that was off center by only .010" at the opposite end!

You'll find that Malloy is also a talented illustrator. You'll find a series of drawings (no text) showing how he turned the flinned cylinder for a 3/4" pipe tee engine.

Get a copy. This is information that you don't often find. I think you'll be surprised by the accuracy possible! Good reading.

5 1/2 x 8 1/2 24 pages.  
Cat. No. 884 \$4.00

# Secrets of Hand Scraping

## Old Time MECHANICS

THE SURFACE-PLATE AND SCRAPER

Object of the Surface-plate. — A skilled workman can machine a plane surface so nearly true that it will be difficult to detect any error in the surface with a straight-edge and the work will be sufficiently accurate for most practical requirements. Nevertheless there will be minute errors in the surface which make it unsatisfactory for some purposes. The sliding surfaces of machine-tools, for instance, require to be more accurate than it is possible to make them by machinery. For detaching the minute errors a surface-plate is used.

Description of the Surface-plate. — The surface-plate is a cast-iron plate having one surface machined and scraped to a practically perfect



FIG. 90

plane. Fig. 90 shows two surface-plates of the usual form. In this design they are made in sizes varying between 34" x 4" and 36" x 36", the largest weighing more than 1000 lbs. A surface-plate of large size should be very carefully and intelligently designed. The metal should be so distributed as to require the least weight consistent with accuracy. The plate should also be so designed that it would not be distorted by variations in temperature. When not in use the plate should be oiled to prevent rusting and kept in a wooden case.

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by W. S. Leonard, 7th edition 1919

## OLD TIME MECHANICS

reprinted by Lindsay Publications

Back in the 1700's when you opened a machine shop, you didn't run out and buy a lathe and planer, you built them! Scraping was the skill necessary to produce absolutely flat and true beds and tightly fitting bearings. It was a skill that every mechanic learned, yet today few people have even heard of it.

Scraping is used on the machines described in the Gingery series of books. Scraping is also the secret method used by Whitworth to produce large surface plates accurate to millionths of inch two centuries ago! It is a very valuable skill. The first half of this booklet deals with the surface plate and scraping.

Also reprinted are instructions for lapping, grinding valves and joints, making shrink fits and force fits, and for balancing pulleys, cutter-heads, and emery-wheels.

Get a copy! Learn about these old-time skills. This information is fast becoming lost technology. 5 1/2 x 8 1/2 booklet 15 pages  
Cat. no. 855 \$2.00

# Hal Hanes's ADVANCED METALWORKING PROJECTS!

**Hal Hanes' ADVANCED METALWORKING PROJECTS**

by H. L. Hanes

Ten great metal projects! All in one book! By a man who has built every one, in most cases more than once.

Build a foundry/forge that will melt three quarts of aluminum. You'll be shown how to configure the furnace to your own needs, and use it for everything from pouring castings to heat treating.

Build an airtight woodstove to keep you warm in winter. This is a boilerplate stove of professional quality. It heats as good as it looks.

You can build a sharpener to keep the blades on your table or circular saw cutting smoothly. Or use it to sharpen blades for woodworkers. A possible money maker!

Build a professional quality wood lathe that will handle everything from eight-foot spindles to large diameter bowls. It's a multi-speed lathe with a ball-bearing headstock, and can be built with as long a bed as you need. Again, this is a top quality design.

In addition, you get six smaller, simpler projects: a simple but very effective jig for silver soldering bandsaw blades back together, a rivet and bolt shear, a professional quality gasket punch, a hold-down clamp for a drill press, a lathe live center, and a tapping guide block.

When Hal approached us about publishing some of the many projects he had completed over the years, we were a little skeptical. Hal would be the first to admit that he is not a writer. But one look at the hundreds of clear, concise construction drawings he prepared convinced us that there was no alternative but to publish. Great projects! Great drawings! And although the text will never win literary awards, it does explain in detail all necessary procedures. You'll see in a second that Hanes is a skilled metal worker, and that this book is of great value.

These projects are not for raw beginners. Some experience is necessary. You'll need a welder, a metal lathe, and you'll have to pour castings. That's why we call it advanced metalworking projects.

Hal was inspired by the Dave Gingery books, so it should be no surprise that Hal's book is much like a Gingery book. Quality!

You should have a copy of this. Anyone of the four major projects described is worth more than the total price of the book. Ten dynamite projects for the price of one. That's not a bad deal!

Even if you don't intend to build immediately, at least put a copy in your reference library. You'll have it when you need it. Order one today! 8 1/2 x 11 paperback 80 pages heavily illustrated

Cat. no. 4686

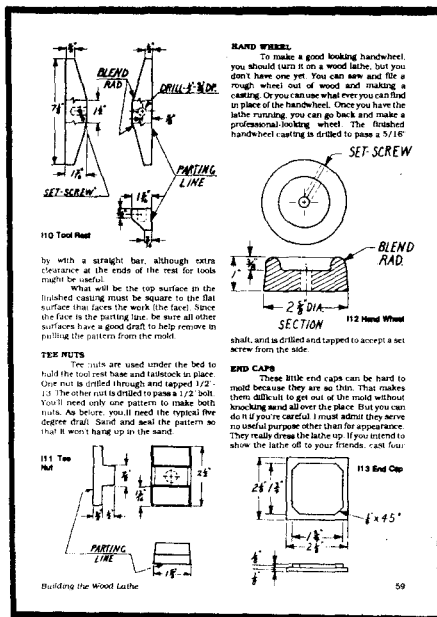
\$8.95

**Ten Dynamite Projects!**

**Hundreds of illustrations!**

**Detailed how-to!**

**Rare information!**



# Build a METAL EATER!

**An amazing metal disintegrator!**

**METAL DISINTEGRATOR**

by Ramah Machines

When you snap off a drill, tap, or even a stud deep in a block of steel, you're in trouble. It's a first class pain in the neck to remove it. But it's easy with this metal disintegrator.

Essentially this is an vibrating engraver driving a commercially available electrode into the metal. An electric spark eats away the metal, leaving a clean hole.

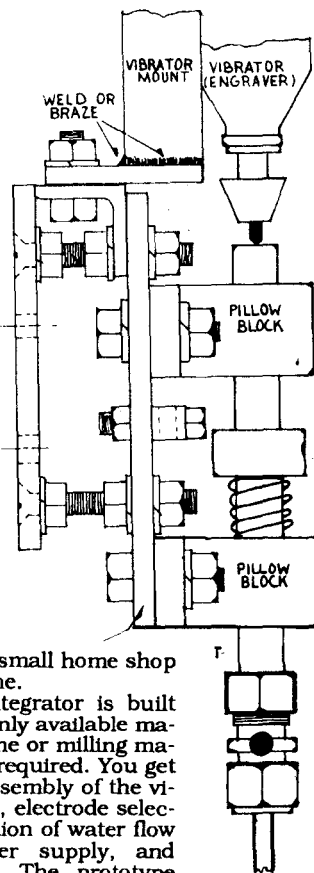
At first you might think that such a machine is an a w f u l l y elaborate solution to a infrequent problem. But the beauty of this machine is that it is the first cousin of EDM machines — those high tech devices that perform machining miracles. This might be a starting point for the development of a small home shop EDM machine.

The disintegrator is built from commonly available materials. A lathe or milling machine is not required. You get details on assembly of the vibrating head, electrode selection, fabrication of water flow device, power supply, and much more. The prototype cost \$275.00 with new equipment, and that's a lot less than \$7000 for a commercial unit.

Again, if you don't need a disintegrator, the ideas and info here should be useful in investigating EDM concepts. Very unusual device. Small but excellent booklet. Worth its price. 8 1/2 x 11 booklet 34 pages with photos and drawings.

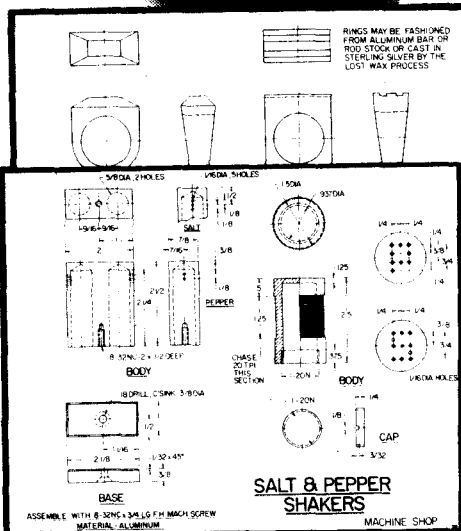
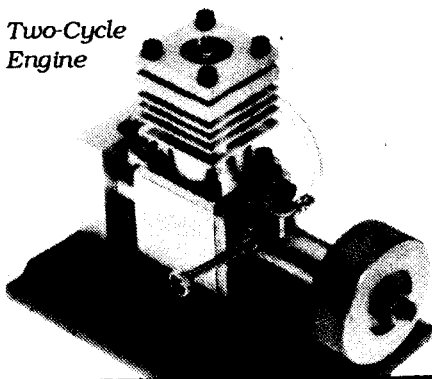
Cat. no. 1277

\$7.95



# Great Shop Projects!

Two-Cycle Engine



## METAL PROJECTS - BOOK 3

by John R. Walker

This is the third and last book of projects for high school shop students. The first two books contain the easiest projects, and this, the most challenging. You'll find that every page is covered with dimensioned plans, and that there is just enough text to do the job.

You get plans for a C-clamp, adjustable square, battery cable puller, shop stool, wrought iron patio table, car top carrier, woodworker's vise, live center, wood lathe, a center finder (wiggler), a small drill press, an engine, and more!

You can build the two-cycle glo-plug engine without making castings. You can machine the 1 1/8" bore x 3/4" stroke engine from solid stock. It will power a model airplane with up to a 5 foot wingspan. That's almost big enough to strap your mother-in-law into!

You can also build a 1" bore x 1" stroke four-cycle engine with overhead valves! Again, no castings needed.

Lots of projects, any one of which is worth the price of the book. Get a copy! 8 1/2 x 11 booklet 96 pages

Cat. no. 199

\$9.95

# PLANING & SHAPING!

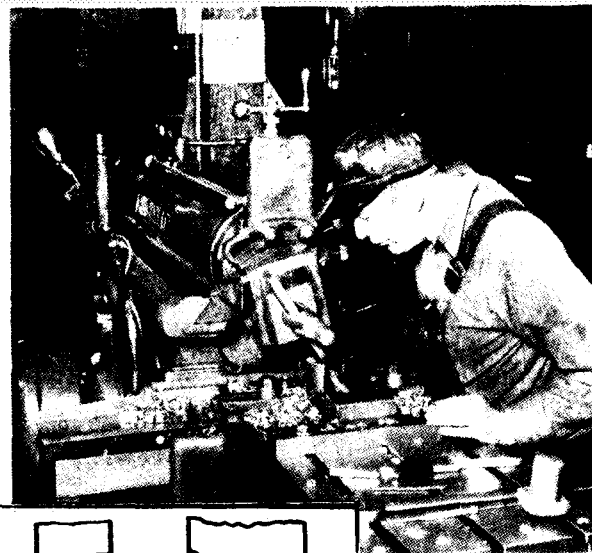
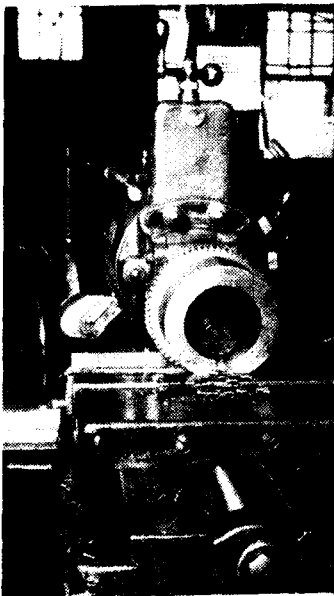
## PLANING, SHAPING & SLOTTING

by Fred H. Colvin  
reprinted by Lindsay Publications

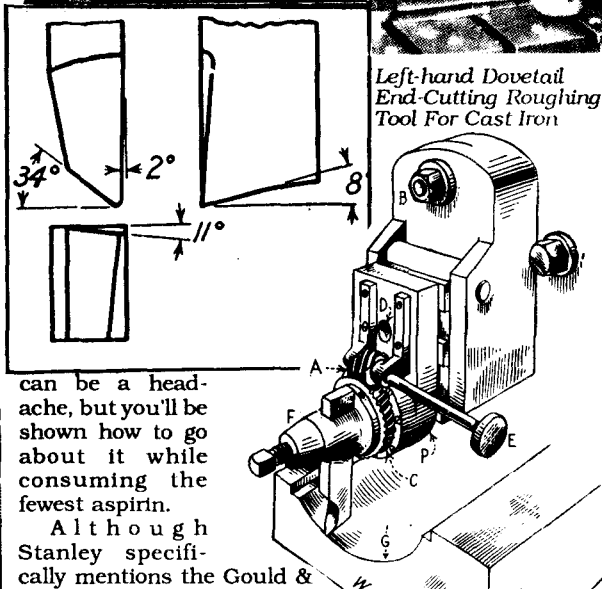
"A concise, practical manual presenting the essentials of the use, setting-up, and operation of planers, shapers, and slotters in clear form for beginners in this branch of machine shop work. Many examples are taken from some of the best known machines of each class, with illustrations of the machines and names of the principal parts. Various kinds of work done on each type of machine are also shown by examples from actual shop practice..." —from the original 1943 dust cover.

Chapters include: planers, shapers, and slotters; cutting tools for planers, shapers and slotters; clamping work for planing and shaping; setting up work on the planer; shapers; ways of holding work; examples of shaper work; and slotting machines.

You'll learn about these three machines, their construction, advantages and disadvantages. You'll learn how to grind the correct angles on their respective tools to accomplish your goal. Clamping and setup



Left-hand Dovetail End-Cutting Roughing Tool For Cast Iron



can be a headache, but you'll be shown how to go about it while consuming the fewest aspirin.

Although Stanley specifically mentions the Gould & Eberhardt and Cincinnati shapers, this book will apply to almost any such planing machine, including the one you build yourself from Dave Gingery's book listed elsewhere in this catalog.

A short but interesting chapter will show you special shaper tools you can build for special slotting and shaping jobs. You'll see a special rotating tool for cutting curved surfaces, a special jig that cuts extra long keyways while eliminating spring in the tool.

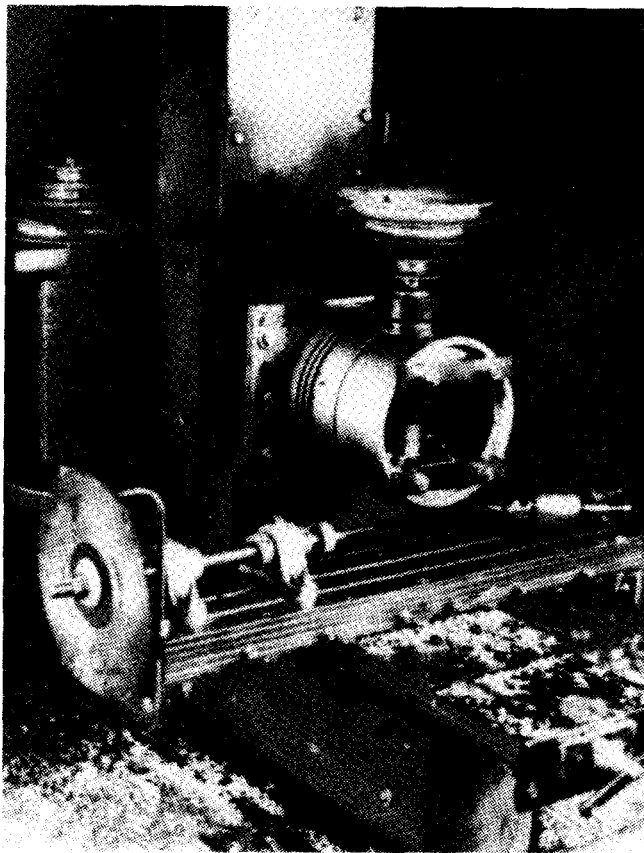
A great little book written by "Mr Machine Shop" himself, probably to teach the thousands of new machinists (a large percentage probably being women) needed for World War II production. Well illustrated and easy to read. Get a copy. You'll like it.

4 1/4 x 7 paperback 128 pages

Cat. no. 4988

\$8.95





# BUILD A VERTICAL MILLER!

## VERTICAL MILLING MACHINE

by Ramah Machines

The proven construction techniques used in the "Nephite" lathe project have been used to build a powerful, precise vertical milling machine.

Since the universal milling table was developed for this machine, the same specifications apply: 13 X travel, 6 1/4" Y travel on the 6" wide 4" high table. Of course, the table can be moved to allow milling at angles. Tests show that maximum thickness of material being milled is 6 to 7". Four spindle speeds are provided with an optional high-low range. Max depth of cut in mild steel with a 3/8" four flute end mill was .035". A 1/2" two flute mill in aluminum cut .220" deep. Max height of the machine is 37" and weighs in at about 260 pounds. It uses a 1/4 to 1/2 hp motor.

You'll need a lathe to machine the spindle, but other than that all you'll need is the usual drill press and handheld electric drill, plus the usual hand tools. No castings.

A lot of valuable information for a very low price. What would it cost to buy a mill? How many hours would you waste perfecting your own design? It's worth it. Order a copy today. 8 1/2 x 11 booklet about 85 pages.

Cat. No. 1209

\$9.95

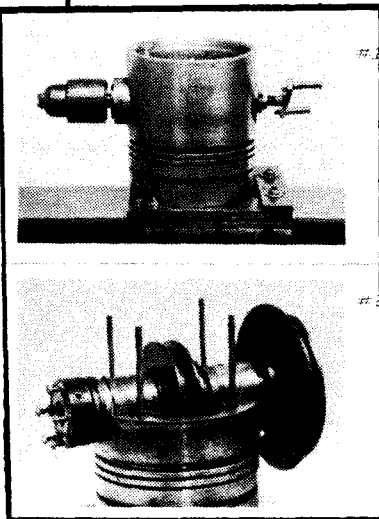
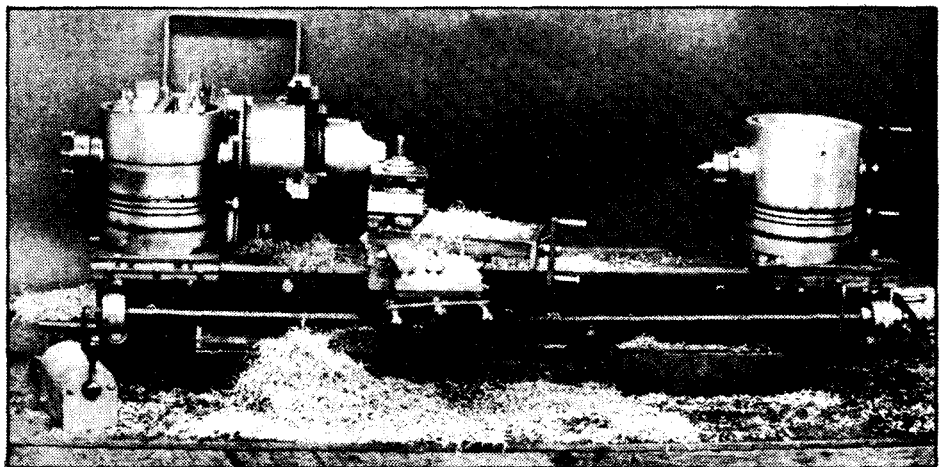
# Build a simple, but powerful lathe!

## NEPHITE LATHE

by Ben Fleming

You can build a precision lathe without castings having almost 10" swing over the three foot bed. And you can do it with little more than hand tools and a small drill press. A 3' bed provides about 22" between centers, but the bed can be extended several feet if you want. Four speeds are provided on the prototype. You get a compound rest, and a cross slide with about 4 1/2" of travel.

Ben writes in his manual, "No outside machining is required. The lathe is bolted together for all parts but three, which are brazed or welded together . . . The only 'pre-



cision' tool I used in the lathe construction was a good quality framing square. Using the construction methods as outlined in these plans, I was able to produce a lathe that, on its first test, showed only a .007 error, and with a few simple adjustments, can be brought close to a tolerance of .001."

Dave Gingery and Ben Fleming have been swapping ideas from the beginning. Dave comments, "His plan answers very well to the man who wants a larger lathe. Well thoughtout project, and within the ability of the average do-it-yourselfer, I think. . ."

Cost of the prototype was \$185. One of Fleming's design tricks is the use of large truck pistons in lieu of castings.

You get a detailed 49 page construction manual. You'll get recommendations, step-by-

step instructions, hints and tips, as well as addresses of suppliers for tools and any special parts that you might need.

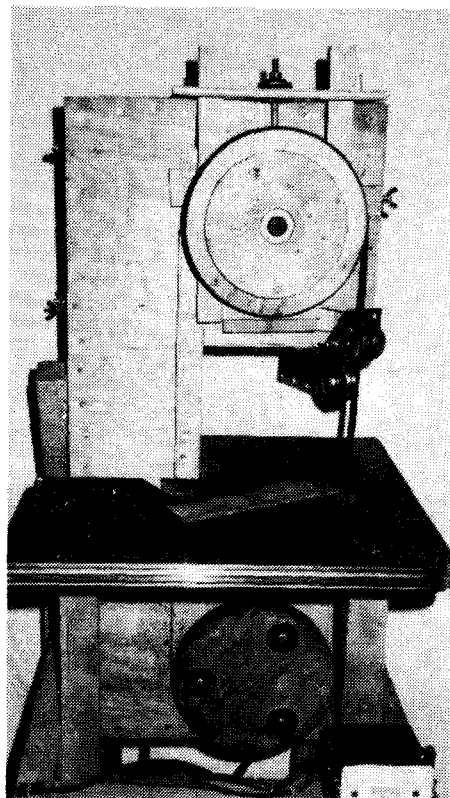
There is no provision for power feed on the lead screw, and therefore, this is not a screwcutting lathe. But by the time you build a copy, you might have figured out an ingenious way to add it. Even so, this is a powerful, precision lathe that can turn out quality work for you.

Following the text are many photos and layout templates to make the construction fast and easy. It looks like a fine lathe. You should consider building one. At the very least put this book in your library in your library. 8 1/2 x 11 paperback well illustrated

Cat. No. 1212

\$9.95

# Build a Metal Cutting Bandsaw!



**How to Build a  
METAL CUTTING BANDSAW**  
by David Wimberley

Build a bandsaw powerful and sturdy enough to cut metal to precise dimensions. A good bandsaw can simplify many metal projects, and often make otherwise impossible projects feasible.

Wimberley will show you how to build this saw out of wood that works amazingly well. Detailed plans will show you every step from making and truing the wheels to building the frame.

You need no unusual tools. For instance, he'll show you how to turn the wheels and crown them without the use of a lathe.

This machine has 7 1/2" wheels which move a 1/2" blade. Ball bearing blade guides twist the blade as it passes through the table allowing you to make extra long cuts. Although the throat is not adjustable because of the twisted blade, the saw can cut heavy material beautifully. The table does not tilt. Dozens of detailed drawings show you all the tricks of building every part of the saw from motor drive mechanism to wheel tilt and tensioning equipment.

Get a copy of this. Great how-to! It will make a valuable addition to your shop. Great plans to build from or adapt. 5 1/2 x 8 1/2 booklet - jam packed - 22 pages  
Cat. No. 891 \$4.50

# Abrasive Cut-off Saw!

## How to Build an ABRASIVE CUT-OFF SAW ATTACHMENT

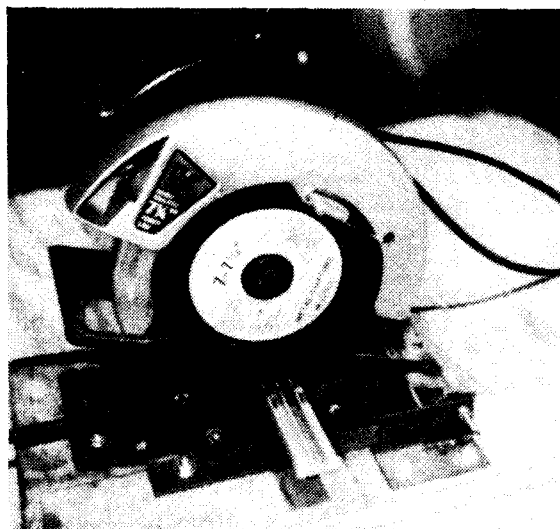
by Kenneth Dixon

Using little more than angle iron, a sheet of plywood, and an abrasive cutoff disc, you can turn the portable circular saw you usually use on carpentry jobs into a powerful metal cutting saw. Dixon will show you how to build the hinge device that bolts to the saw's frame, and the vise clamp that holds the work securely for cutting. Although the plans show dimensions for his own saw, Dixon shows you how to tailor the plans to fit yours.

Save your arm! If you already have a saw and some angle iron, you can build a powerful new tool for just a few dollars.

Like any power saw, an abrasive cutoff saw can be dangerous. But you'll be shown how to use the machine safely. The author's model has been used successfully without incident for quite some time now.

Build one! It's so easy, you're almost foolish not to! Low cost,



detailed plans with drawings, dimensions, how-to and photos.

Get a copy. 5 1/2 x 8 1/2 booklet 14 pages. Cat. No. 890 \$4.00

# Build a 26" Scroll Saw!

## BUILD A 26" SCROLL SAW

by Sun Thrift

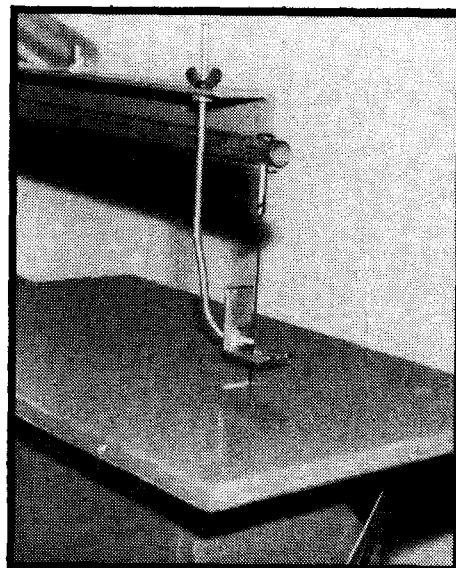
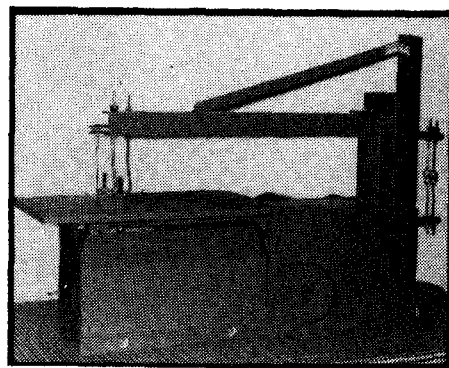
"A scroll saw in the 26-inch size can be an expensive item to purchase but you can build a rugged and very useful machine by following this plan, at a fraction of the cost. All materials may be obtained locally and all connections are made with bolts or screws, eliminating the need for any special castings or welding."

You'll find this saw uses common 6 1/2" pinned-end coping saw blades which are inexpensive and available almost anywhere. Most of the machine frame is built of 2x4 fir lumber. Angle iron, threaded rods, drill rod and other commonly available stock is used to build the rest of the machine.

Specifications: 26" maximum throat, single speed, bench model scroll saw. 0-45° table tilt. 12" by 20 1/2" table. 860 strokes per minute with recommended sheave diameter ratio. Stroke adjustable from 3/8" to 3/4". 2" maximum depth of cut. Uses 1/4 hp motor 1725 rpm CCLW rotation. Drive-shaft bearings are self-aligning 1/2" diameter-bronze sleeve or ball.

You get text, parts list, photographs, and a full set of excellent plans along with recommendations and precautions for use of the completed saw. Excellent plans. Reasonable price.

8 1/2 x 11 stapled sheets 19 pages.  
Cat. No. 1259 \$10.95



## THE PERPETUAL MOTION MYSTERY

by R. A. Ford

Perpetual motion. Some people laugh at it. Others take it very seriously. Here's a serious look at these unusual systems.

First, you get a reprint of the small and now-rare "Perpetual Motion Handbook Through Entropy Reversal" published in 1967 by I. R. Barrows. Then, you get his first (and last) four "Perpetual Motion Journals" published about the same time. Each is small but filled with letters patents, ideas, illustrations, and thought-provoking suggestions.

The author jumps into a discussion of why perpetual motion might be possible, pointing out unusual theories from the past, and pointing out possible defects in current theories.

Covered are kinetic gravitational theories of the 18th century, DesCarte's Vortex Theory, LeSage's Impact Theory of Gravity, and Brush's Wave Theory. Attempts at experimental confirmation of these theories are then provided.

Natural gravitational anomalies such as solar eclipse, bulging river surfaces, bore at sea, unusual rock movements, slowly falling hail are revealed. You'll learn about Robert Cook's inertial propulsion device and its relation to Newton's Law.

The last large section covers the Orffyreus wheel built in Germany centuries ago. The author believes it might have been the only real perpetual motion machine yet invented, the secret of which was lost. You'll learn about the inventor's life, his educa-

# Perpetual Motion Mystery

## A Serious Inquiry into PM!

tion, his wheels, his successes and failures, the tests, and more.

Last, the author, based on the material presented in earlier chapters suggests how a perpetual motion machine might be built.

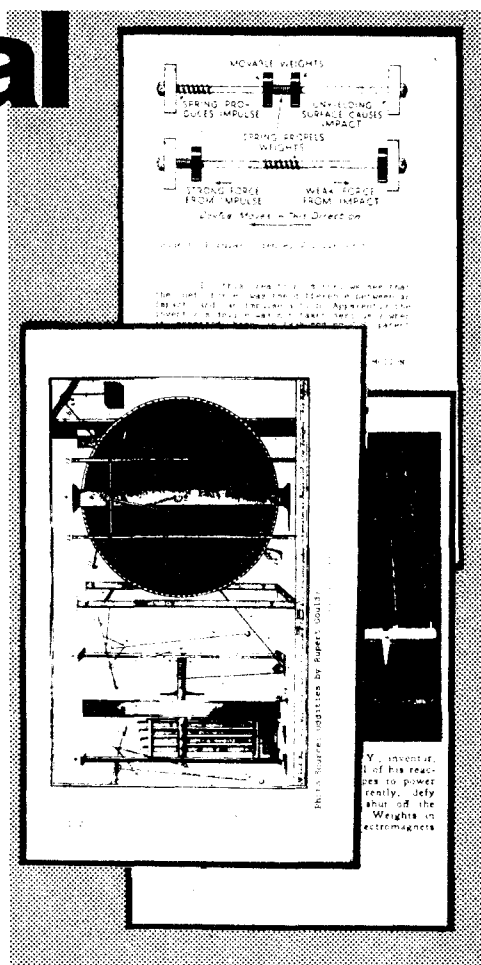
You get a collection of strange, rarely seen stories and phenomena that might hold the key to perpetual motion, if, indeed, such a machine can be built.

This is not a construction manual, nor is it extremely complex. It's a notebook gathered over the years, one that should be interesting to believers and non-believers.

Consider it. You won't find anything quite like it on the market. Different. Unusual. Interesting reading. Get a copy. 5 1/2 x 8 1/2 paperback 196 pages

Cat. no. 4538

\$9.95



# PERPETUAL MOTION HISTORY

## PERPETUAL MOTION

The History of an Obsession  
by Arthur Ord-Hume

People for centuries have attempted to build a machine that will produce more energy than it consumes. And they've all failed.

If you think you've invented a new type of perpetual motion machine, you had better read this book. Chances are, it has already been attempted.

For the rest of us, this book is interesting reading. There are some machines, that don't actually produce energy, but they run seemingly forever on a small amount of energy, like Singer's perpetual chime that was set up in 1840 and is still operating!

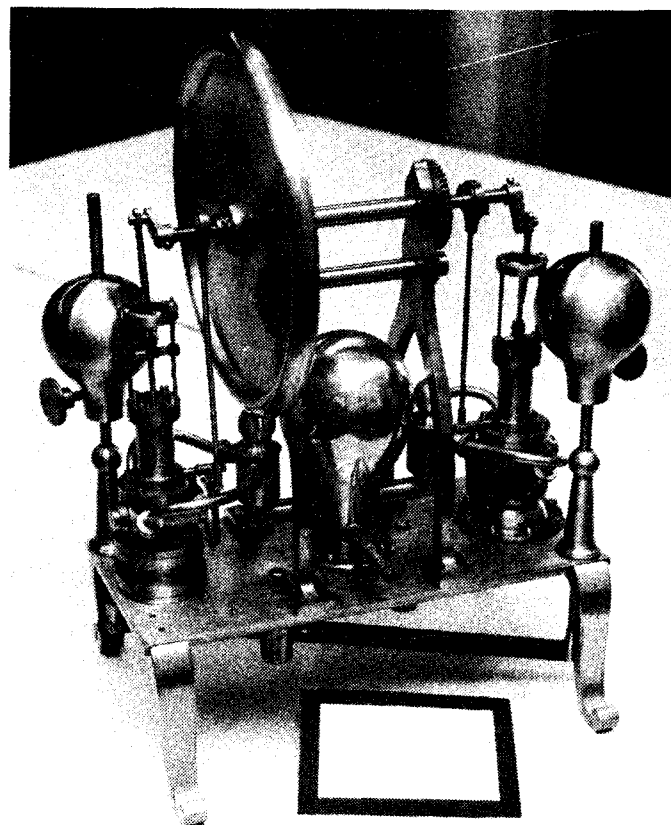
Learn about medieval ma-

chines, self-moving wheels, lodestones, electromagnetism, steam, capillary attraction, spongewheels, Cox's machine, the Redheffer device, the Keely motor, odd ideas about vaporization and liquification, the barring of perpetual motion devices from the patent office (although the magnet motor sneaked in), rolling ball clocks, and more. You get lots of illustrations, and an excellent list of references for further reading.

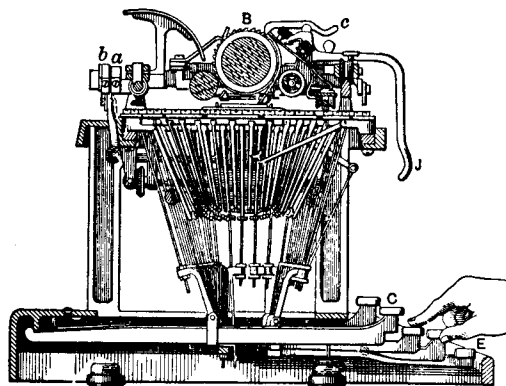
Interesting book! Well written and researched. Excellently done. If nothing else, put one in your reference library. It's not all that expensive. 5 1/2 x 8 1/2 paperback 235 pages.

Cat. no. 510

\$5.95



# 998 Curious Mechanical Movements

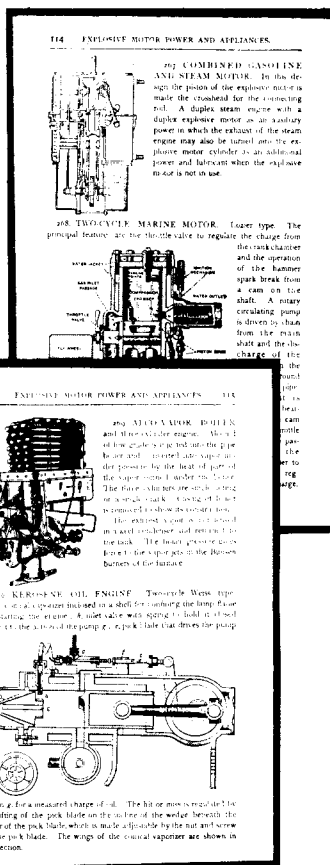
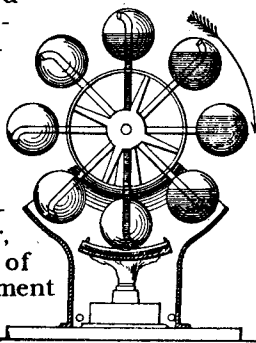


## CURIOUS MECHANICAL MOVEMENTS

by Gardner D. Hiscox

What a ridiculously long title! "Complete work and a continuation, as a second volume, of the authors's book entitled 'Mechanical Movements, Powers and Devices' being more special in scope than the first volume, inasmuch as it deals with the peculiar requirements of the various arts and manufactures, and more detailed in its explanations because of the greater complexity of the machinery selected for illustration. With a chapter on radio telegraphy and telephony and including an explanatory chapter on the leading conceptions of perpetual motion existing during the past three centuries."

You get one super 1927 picture book of almost a thousand mechanical movements and machines from the simplest to the most complex of the era. Chapters include mechanical power lever, transmission of power, measurement of power and springs, generation of power, steam power appliances, explosive motor power, hydraulic power, air-power motors, gas and air-gas devices, electric power devices, marine devices, road and vehicle devices, railway devices, gearing and gear motion, motion controlling devices,



clocks, mining equipment, mill and factory machines, textile equipment, construction machines, draughting equipment, perpetual motion, and electronics of the era.

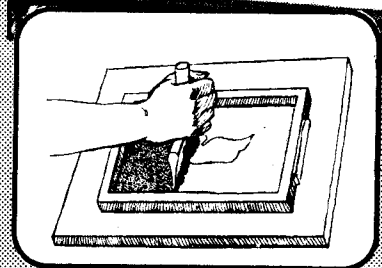
You get a detailed drawing and explanatory paragraph for 998 different devices from flash tube boilers to double circuit crystal sets. Not all drawing are detailed enough to allow you to build one, such as the Graf Zeppelin or an early monoplane, but others like steam injectors, spring motor, and the lathe taper attachment are quite good. You'll see printing telegraphs, catamaran sail boats, two-cycle Weiss engine, combination steam and gasoline motor, a flour packer, a turpentine still, and over fifty perpetual motion machines.

The majority of devices presented are 1927 "high-tech" rather than simple mechanisms. This is a treasure trove of ideas for the inventor and experimenter, a valuable research tool for designers and historians, and a fun book for the rest of us to read. The price is somewhat higher than most books in this catalog, but you're paying much less than I did for the original. You'll think it's worth every last penny and then some. You'll really enjoy it. Get a copy.

5 1/2 x 8 1/2 paperback. 412 pages  
Cat. No. 4406 \$14.95

# Discover Silk Screen Printing!

Print posters, decals, shirts, and much more!



## COMPLETE BOOK OF SILKSCREEN PRINTING PRODUCTION

by J. I. Biegeleisen

Take an old picture frame, cover it with cloth, glue a stencil to it, and you have a primitive silkscreen. You lay it on paper, cardboard, or a tee-shirt, put thick ink on the other side and use a squeegee to force the ink through the stencil. You've printed your design. It's that simple.

You can print signs, shirts, decals, wallpaper and much more without expensive equipment. This book will show you how to do everything from building the simple frame to multi-color printing.

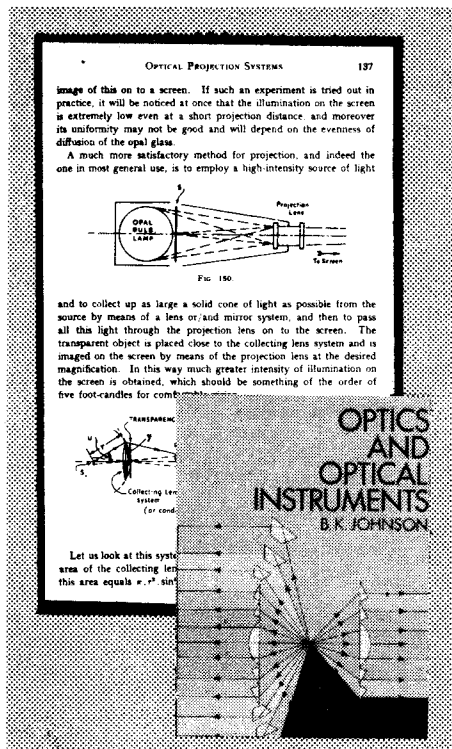
Silkscreen is versatile and low cost. It's a skill you should have. Here's a dirt cheap book that will show you how.

5 1/2 x 8 1/2 paperback 253 pages illustrated

No. 424

\$4.50

# Optics!



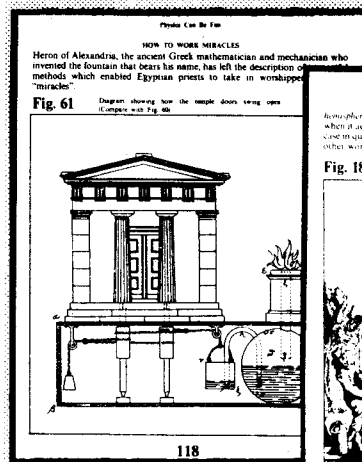
## OPTICS & OPTICAL INSTRUMENTS by B.K. Johnson

Here's a really good book for your reference library. It's a reprint of a 1947 book that reveals in simple formulas how to design or at least understand microscopes, telescopes, collimators, simple and complex lenses, photographic lenses, mirrors and more.

Chapters include: reflection and refraction, focal length measurements, the eye, the telescope, the microscope, photographic lenses, optical projection systems, working and testing optical glass, plus an appendix describing how to silver mirrors, cement lenses, and more.

This is useful. For instance, I built an old fashioned 5 x 7 view camera using an enlarging lens. Using the principles taught in this book and some algebra, I worked out the simple formulas for calculating depth of field. A simple loop on a personal computer cranked out a whole table of values that helped me get much better performance from my camera without trial-and-error.

You won't need this material every-day. But if you need basic info on lenses without all the complex theory, get a copy of this. Quite reasonably priced. 5 1/2 x 8 1/2 paperback 224 pages  
Cat. no. 551 \$4.95



## PHYSICS CAN BE FUN by Y. Perelman

This is simplest and easiest to understand books on physics I've ever seen. It's beautifully illustrated and uses totally practical examples to explain the basics of physics which is the study of energy. And believe it or not, this book was written and published in Russia.

Chapters include Speed and Velocity, Composition of Motions; Gravity and Weight, Levers, Pressure; Atmospheric Resistance; Rotation, Perpetual Motion Machines; Properties of Liquids and Gases; Hot and Cold; Light; Mirrors and Lenses; Vision; Acoustic Puzzles; Fundamentals of Mechanics; Force, Work, Friction; Rotation; Gravitation; Travelling in a Projectile; Liquids and Gases; Heat; Magnetism and Electricity; Reflection and Refraction of Light, Vision; and

Sound, Wave, Motion.

You'll find out what causes mirages in the desert, how spherical lead shot for old time muskets was made and why the process worked, why perpetual motion machines don't work, why people walk and run the way they do, why flags flutter in the breeze and much more.

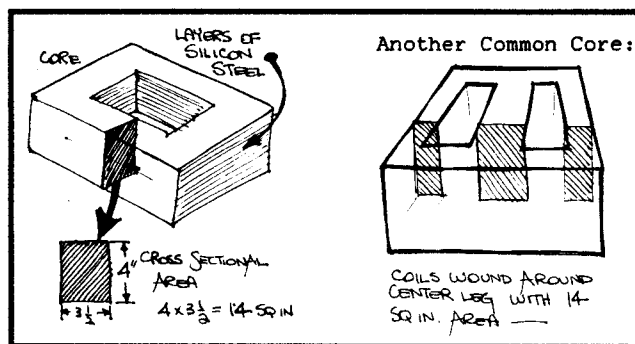
Again, this is one of the easiest to reading and most entertaining physics books I've ever seen. You'll find practically no math, and when you're done reading, you should have a much better understanding of why the world acts the way it does. Get a copy. I think you'll really like it. 6 1/2 x 8 1/2 hardcover 430 pages  
Cat. no. 570 \$10.95

# BUILD A 200 AMP WELDER

You can find many different welders on the market, so why even consider building one? Maybe you can save money. Perhaps you need something bigger than 200 amps and want to scale up a standard design. Of course, there's always the pride of being able to say you built it yourself. Or perhaps you would just like to know how they work.

Here's a publication for the mechanic (the non-electrician) — an introduction to transformer welders. You'll learn how transformers work, what is and is not important in the design of a welder transformer, how current is controlled, how an AC to DC rectifier bank is built, and more. You can design welders for 100, 200 or more amps using the principles revealed here.

You will NOT get complicated theory. You get information that has been learned by study and by doing, rather than from designing transformers as a profession. You'll learn the unique aspects of controlling heavy welder currents. This is information generally available nowhere else. After reading and studying this manual, you'll probably want to refer to other books which cover



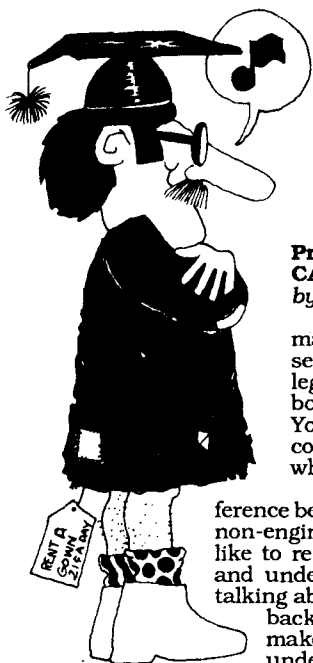
heavy transformer design theory, details on silicon steel, wire types, design problems and much more.

You can build a single transformer that can kick out heavy currents for welding, thawing pipes, AND, when used with a bridge rectifier, can be used to charge batteries, electroplate and more.

Get a copy of this hot little manual. You'll find that it is very clearly written and easy-to-read. This is the FIRST book you should consider before building or even possibly repairing a transformer welder. Order a copy today. 5 1/2 x 8 1/2 30 pages.  
Cat. No. 85 \$4.00



# Learn Calc from a Comic Book!



## Prof. E. McSquared's CALCULUS PRIMER by Swann & Johnson

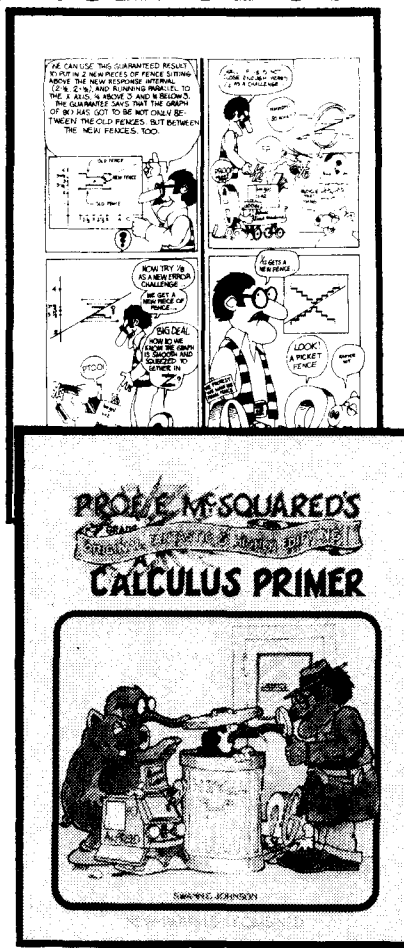
This is the craziest math book I've ever seen! I had calc in college but never in comic book form like this! You should order a copy of this and learn what it has to teach.

Calculus is the difference between engineers and non-engineers. If you would like to read engineering texts and understand what they're talking about, you need a calc background. This won't make you a pro, but you'll understand what functions and discontinuities are, limits, and derivatives. You'll pick up the language and be able to understand scientific talk.

It will take work on your part, but I've never seen a more brilliant explanation of what's happening. This is a tool like a lathe or a table saw. Learn this skill, and it will return dividends for all the years you have left to live. An unusual to learn the core concepts of calc. 8 1/2 x 11 paperback 214 page comic book.

Cat. No. 51

\$17.95

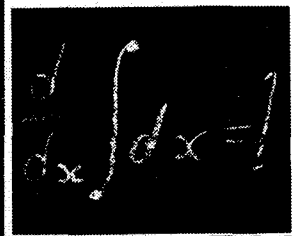


# Calculus Made Easy

138 CALCULUS MADE EASY  
The quantity on the right-hand side is the difference between two sines, and books on trigonometry tell us how to work this out. For they tell us that if  $M$  and  $N$  are two different angles,  
$$\sin M - \sin N = 2 \cos \frac{M+N}{2} \sin \frac{M-N}{2}$$
  
If, then, we put  $M = \theta + d\theta$  for one angle, and  $N = \theta$  for the other, we may write  
$$\sin(\theta + d\theta) - \sin \theta = 2 \cos \frac{\theta + d\theta + \theta}{2} \sin \frac{\theta + d\theta - \theta}{2}$$
  
or  
$$d\sin \theta = 2 \cos \theta \sin \frac{d\theta}{2}$$
  
But if we regard  $d\theta$  as indefinitely small, then in the limit we may neglect  $d\theta$  by comparison with  $\theta$ , and may also take  $\sin \frac{d\theta}{2}$  as being the same as  $\frac{d\theta}{2}$ . The equation then becomes:  
$$d\sin \theta = \cos \theta \cdot d\theta$$
  
and, finally,  
$$\frac{d}{dx} \sin \theta = \cos \theta$$

The accompanying curves, Figs. 44 and 45, show, plotted to scale, the curves  $y = \sin \theta$  and  $y = \cos \theta$ .

Calculus  
made easy  
Silvanus  
P. Thompson  
Third Edition



# Pre-Calculus Mathematics

## PRECALCULUS MATHEMATICS IN A NUTSHELL

by George Simmons

You can quickly learn or review geometry, algebra, and trigonometry with this excellently written and illustrated paperback.

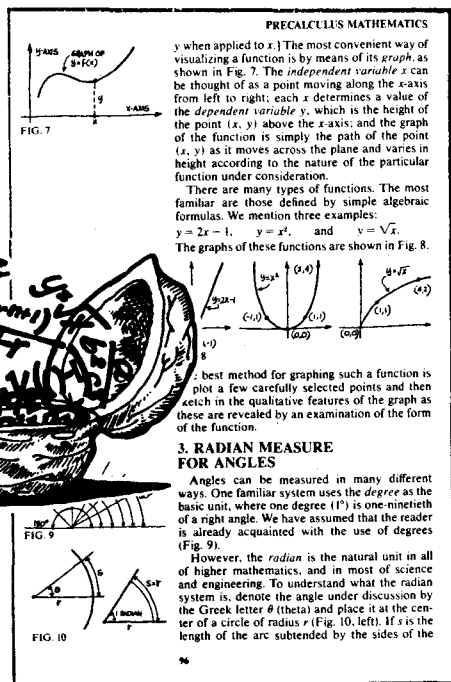
To really understand calculus, most often it's helpful to explain what's happening with pictures of geometric figures and curves. For instance, calculus uses the process of integration to find the area of irregular forms. Geometry and trig do much the same thing but on a much simpler basis. So it makes sense to understand the simple techniques before you jump into the more complex (and much more useful) techniques of calculus.

Algebra is simply the shorthand of calc — a way of solving for unknown quantities. You need to understand it, too.

Get a copy of this. It's simply written, and beautifully illustrated. If there's any fault, it's that each explanation is short. On the other hand, if they were lengthy, the book couldn't be called "in a nutshell". Quality. It delivers. 7 x 9 paperback. 119 pages.

Cat. No. 549

\$9.95



## CALCULUS MADE EASY by Silvanus Thompson

Fear is often the biggest obstacle to learning math — all those strange symbols! When a calculus book starts out in the first sentence of first paragraph on the first page explaining what the most scary symbols mean, you know it's a good book. The author obviously wants to teach you something rather than scare you.

Any scientist or engineer will tell you calc is a tool not much different from a welder or a lathe. But I took calc from a mathematician in college, and that jerk thought calc was an art form! Most of the time I didn't know what he was talking about (I'm not sure he did either). Who's looking for beauty in numbers? I need to solve problems.

This book, on the other hand, shows you how useful calculus is. It is as practical an approach as I've ever seen, and the author really takes the fear and confusion out of teaching this math.

Don't get me wrong. Just thumbing through this book is NOT going to teach you calc. You're going to have to work at it. But Thompson's approach is down to earth, and he covers it all: differentiation and integration. And this is 90% of the heavy math you see in engineering books.

A lot of book for the money! If I had had this book at the same time I had that madman mathematician, I probably would have learned a lot more. It's too late for me, but not for you. Order a copy.

5 1/2 x 8 1/2 paperback. 250 pages.

Cat. No. 52

\$6.95

# 507 Mechanical Movements!

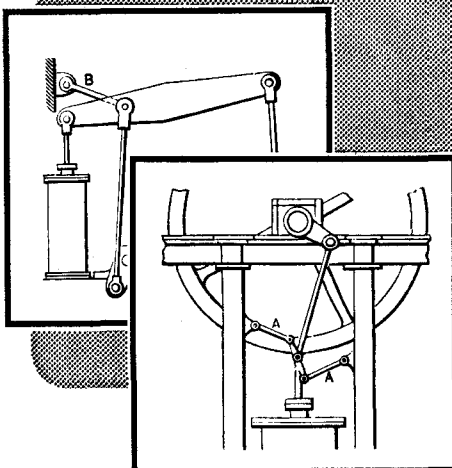
## 507 MECHANICAL MOVEMENTS

by Henry T. Brown

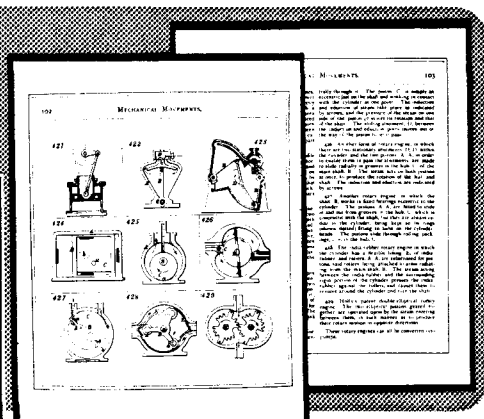
reprinted by Lindsay Publications

Originally copyrighted in 1868, this 1893 printing carries a complete title of "Five hundred and seven mechanical movements embracing all those which are most important in dynamics, hydraulics, hydrostatics, pneumatics, steam engines, mill and other gearing, presses, horology, and miscellaneous machinery; and including many movements never before published and several which have only recently come into use."

You'll find each left-hand page carries nine illustrations, and each right-hand page presents brief descriptions of their operation. Some of the movements are trivial, but others are quite unusual and interesting. In some cases you'll find that these movements were popular at one time, but are no longer



used. Discover Fairbairns' bailing-scoop, Anderson's gyroscopic steam engine governor, or Clayton's sliding journal-box.



If you design machines, this can be very useful to you as practical how-to info. At the very least you'll find this a great book to browse through on a rainy afternoon. Very interesting. 6x7 paperback 128 pages  
Cat. no. 4252 \$7.95

## Lathe Design!

### LATHE DESIGN

by Oscar E. Perrigo

reprinted by Lindsay Publications

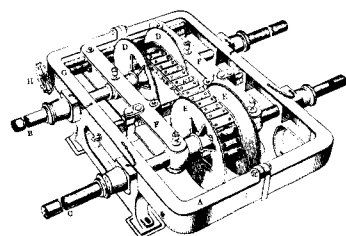
Discover the secrets of lathe design as it was practiced in 1916!

You'll learn about the history of the lathe up to the introduction of screw threads, classification of lathes, design of bed and supports, headstock casting and spindle, spindle mechanism and back gears, tail piece, carriage, apron, turning rests, supporting rests, shaft straighteners, lathe attachments, rapid change gear mechanisms, lathe tools, testing a lathe, lathe work, engine lathes, heavy lathes, high-speed lathes, special and turret lathes and more. You even get practical instructions on lathe operation.

You'll see page after page of illustrations showing the various types of beds and cross bracing, tailstocks, spindle arrangements, gearing and drive techniques, taper attachments, and just about anything else you might imagine.

This is a great book for someone designing and building lathes, perhaps restoring an old lathe, and just for fun (if you're a die-hard machine shop fanatic). You'll enjoy this. It's heavily illustrated with easy to read text. A fun book. Get a copy. 5 1/2 x 8 1/2 paperback 469 pages

Cat. no. 4180 \$12.95



## Indexing Tricks!

From a 1903 technical school textbook on milling machine work, we have taken a valuable section on indexing. Most of this booklet covers indirect compound indexing, the method that will give you the greatest flexibility and the greatest number of options.

You'll learn about construction of the indexing mechanism, calculating runs of the index crank, selecting the index circle, using the sector, using index tables, calculating the moves for compound indexing, and simplifying the moves. The math used is simple fraction arithmetic.

The second section covers the use of the spiral head which at that time was an innovation marketed by Brown & Sharpe. You'll see the improvements in gearing, what effect rotating the index dial has, and you'll get an excellent explanation of the numerous indexing tables provided.

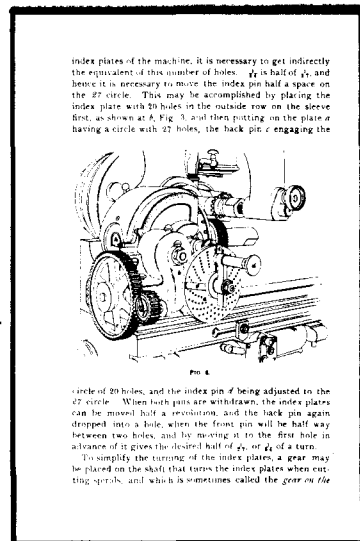
A final section covers fractional indexing using two indexing plates and special spiral head. Three more pages of indexing tables are provided.

Some of the information should be quite useful to you. Some will not, but even so, what you learn should expand your knowledge to allow you to make more creative use of the dividing head you do have.

This quality reprint is reasonably priced and loaded with valuable information. Order a copy today.

5 1/2 x 8 1/2 booklet 31 pages  
Cat. no. 869

\$3.50



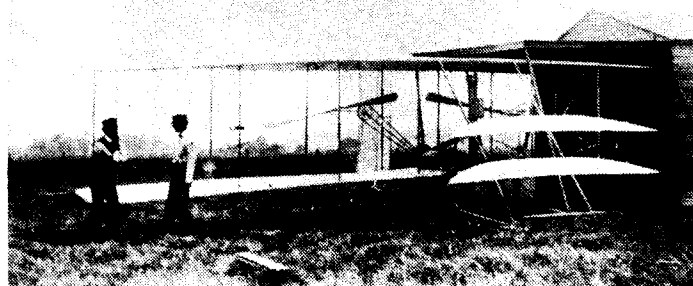
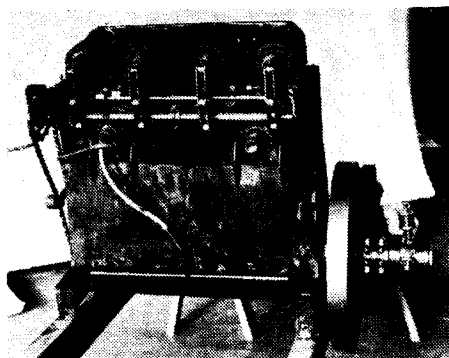
# How We Invented the Airplane!

**HOW WE INVENTED THE AIRPLANE - An Illustrated History**  
by Orville Wright  
edited by Fred Kelly

In a court fight (over patents, if I remember correctly) Orville Wright was forced to write a brief history of their invention. The manuscript was thought lost, but turned up after his death.

This is a reprint of Kelly's original 1953 book in which he reprinted the manuscript together with 76 photographs, many of them quite rare showing the brothers, their bicycle shop in Dayton, the flying machine, closeups of their aircooled engine, and more.

You've heard the story a dozen times about Kitty Hawk, but with this book you can imagine



that you are working the brothers at the turn of the century on developing the first true airplane using the then-high-tech engineering methods of systematic development, wind tunnels and all the rest.

This is a picture book, and it's as close as you'll come to finding a time machine that will take you back to watch and participate. This is interesting reading about an amazing machine. Get yourself a copy. You'll like it. 8 1/2 x 11 paperback 96 pages 76 photos

Cat. no. 1286 \$6.95



## The WRIGHT BROTHERS

**THE WRIGHT BROTHERS**

**A Biography**

by Fred C. Kelly

This is THE definitive biography of the Wright Brothers originally published in 1943. The back cover says its all:

"In this fascinating, highly readable biography, Fred C. Kelly, a former newspaperman, author and an old friend of the Wrights, tells the story of the two brilliant, dedicated, flight-obsessed bicycle mechanics from

Ohio who first realized mankind's age-old dream of conquering the skies. Long considered the definitive Wright biography (the manuscript was read and approved by Orville Wright), this book recounts the Wrights' small-town boyhood, their early interest in all things mechanical, the establishment of the Wright Cycle Shop, and the complete behind-the-scenes story of how they designed, built, tested and flew the first 'Flyer.'"

Chapters include boyhood, background, printing and bicycles, first thoughts of flight, gliding at Kitty Hawk, first power flight, after the event, experiments of 1904-'05, it still wasn't "news", US Army not interested, Europe discovers the Wrights, the Wrights in Europe, a deal with the US, end of disbelief, when Wilbur Wright won France, further adventures in 1909, in aviation business, patent suits, and why the Wright plane was exiled.

As you probably know the Wright Flyer is no longer in exile and hangs in the National Air & Space Museum in Washington, DC. This book will help you relive the earliest days of flight. You can easily imagine yourself being there. Get a copy. Reasonable priced. 5 1/2 x 8 1/2 paperback 340 pages  
Cat. no. 1295 \$7.95

## One, Two, Three, Infinity...

**ONE, TWO, THREE...**

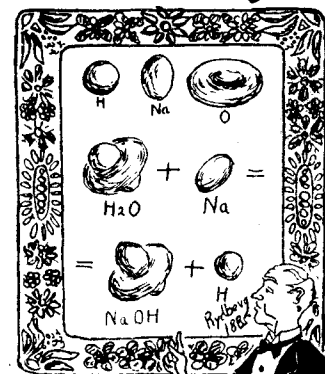
**INFINITY - Facts and Speculations of Science**

by George Gamow

In 1947 George Gamow, a world renowned physicist, took some of science's most complex theories, mathematical processes, and mysterious riddles and translated them into easy-to-read English so that the layman could enjoy them, too. I have read this book several times and have always enjoyed it.

Part one covers big numbers and natural & artificial numbers. Part two explores space, time and Einstein with chapters on the unusual properties of space, the world of four dimensions, and relativity of space and time. Then the next part delves into the microcosmos with chapters on descending staircase, modern alchemy, the law of disorder, and the riddle of life. The final part covers macrocosmos with chapters on expanding horizons and the days of creation.

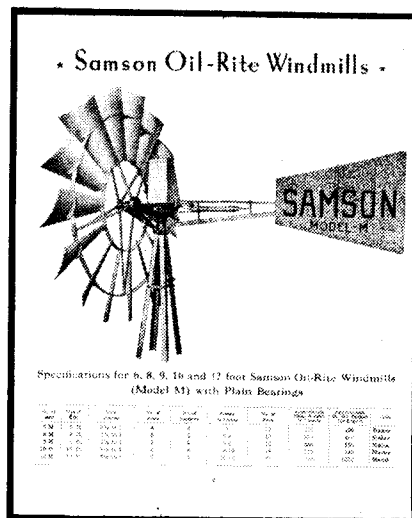
Gamow grapples with con-



cepts like whether it is possible or not to bend space, why a rocket shrinks, the "end of the world problem", excursions in the fourth dimension and more. More than 120 drawings by the author himself will amuse and educate you.

This is a fun book. One of my favorite easy reading science book. I think you'll like it, too. Get a copy. 5 1/2 x 8 1/2 paperback 240 pages  
Cat. no. 574 \$6.95

# Samson "Oil Rite" Windmills



**SAMSON OIL RITE WINDMILLS**  
by Stover Mfg. and Engine Co.

Just about every farm at the turn of the century located in the Midwest and Plains states had a windmill for pumping water. Here's the sales catalog for one of the leading manufacturers of those mills.

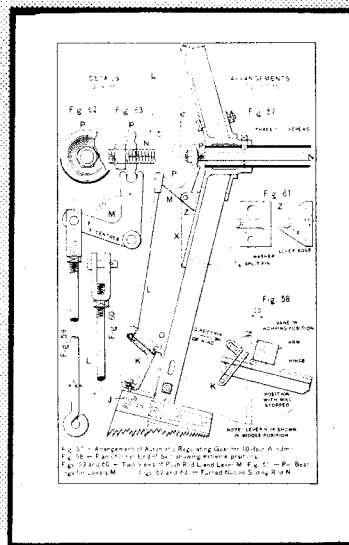
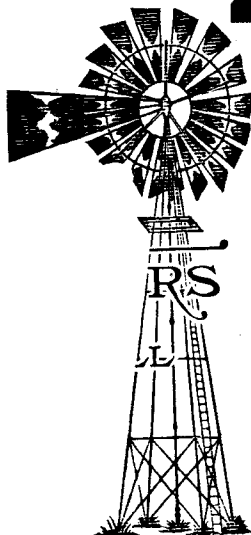
You'll see all the mechanical details: the gears, bearing, vanes, pumps, and the rest. And you'll get complete specifications.

If you're interested in windpower, this is a great reference, since these mills were built to perform and last. I'm sure many are still in operation. If you're going to design your

own windmill, it might pay to look at a proven design. And besides, the price is right. 8 1/2 x 11 booklet facsimile reprint 22 pages. Cat. no. 2011

\$3.00

# Windmills & Wind Motors



## WINDMOTORS

by F. E. Powell

reprinted by Lindsay Publications

Put the wind to work with one of these turn-of-the-century designs.

You'll learn about different types of windmills, some of them unusual. Then you'll be shown how to build a model tower windmill similar to those in Holland.

Chapter 3 will show you how to build a real power-producing windmill with three foot diameter sails. It may be a small windmotor, but it can drive a small dynamo. You get all the important design details.

In Chapter 4 you are shown how to build a 6 foot diameter windmill capable of driving a 30 watt dynamo at 16 mph. You'll see many detailed drawings showing how the all-wood machine is built, and how metal gearing brings the power down to ground level.

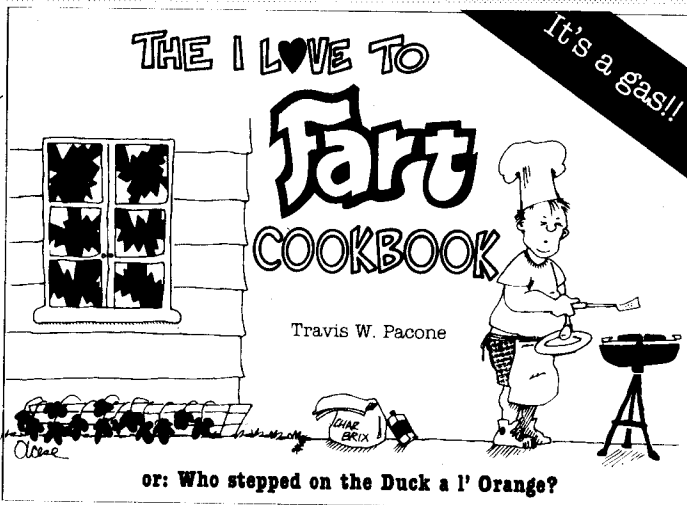
Another chapter reveals a 10 foot diameter windmotor. The last chapter gives you tips on generating electricity—high tech in 1910! Obviously better generators are available now, but the basic principles still apply, and the control methods still work.

I think you'll really enjoy this book. These may not be as hot as modern designs, but building one of these babies should be relatively easy and low-cost. You get great designs from a simpler time when simpler materials were used to get surprisingly good performance.

A really nice little book to have. Low cost. Get a copy. 5 1/2 x 8 1/2 paperback 88 pages well-illustrated. Cat. no. 4279

\$4.95

# BAD GAS!



## I LOVE TO FART COOKBOOK

by Travis W. Pacone

You had best not be downwind from the author! He presents his favorite recipes and rates them on their ability to produce gas! Enjoy such great dishes as Rumble Seat Salad, Turkey Talkback Stuffing, Neanderthal Bison Blaster, and many others.

While you're mixing up a batch of Swamp Gas Soup, you can read interesting background

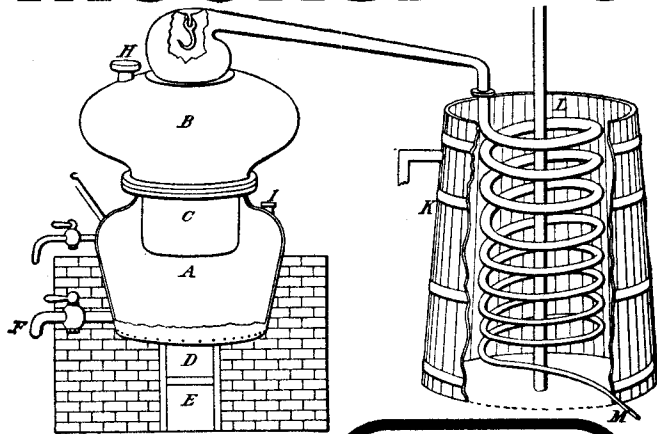
information and enjoy the cartoons. But be careful! If you give this book to your wife and she uses it, you may end up sleeping alone in the garage!

Irreverent! Tasteless! Disgusting! In other words, a book you'll probably enjoy... or you know someone who will. Makes a ridiculous gift! Grab a copy or two! 7 1/2 x 5 1/2 paperback about 128 pages

Cat. no. 675

\$4.95

# Make your own Moonshine!



**Great How-To from 1910!**

## PRACTICAL DISTILLER

by Leonard Monzert

reprinted by Lindsay Publications

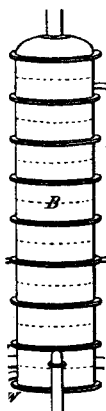
Make moonshine! Poison yourself! Go blind! From 1889 comes this little gem of a book showing how to distill "Brandy, Gin, Rum, Whiskey, Arrac, Poteen, etc., all of which owe their respective intoxicating properties to the amount of alcohol which they contain."

While other books show you how to make fuel alcohol, this one will show you the equipment you need to make booze. Included are discussions on the still and appurtenances, the farmer's still, directions for erecting a distillery, running a charge, the doubler, distillation of liquors, rectifying or leaching, alcohol refining, distillation of volatile oils, extracts, the water bath still, essences and liqueurs, blending and compounding and more.

Making booze without a permit is illegal. The government wants its taxes. You can use the equipment to make fuel alcohol for your car, perfume, and even vinegar.

If you intend to make booze, you're on your own. Moonshine stills were made with galvanized iron, old radiators, and other nasty metal that could poison you. Besides, "white lightning" tastes like lightning because it isn't aged or mellowed in barrels. It's nasty stuff. And you'll find little information here on turning out really good whiskey. This is a book on equipment, not gourmet cooking.

A great curiosity. Rare information. I won't tell the WCTU or BATF you're ordering copy. 5 1/2 x 8 1/2 paperback 156 pages. Cat. no. 4589 \$7.95



# Make SODA POP!

## SODA POP!

Make your own soda! It's easy! And it's great soda!

Build this remarkably simple device using hardware store components, hook it to a bottle of carbon dioxide, and you're ready to make soda. The major expense is the CO2 tank and its regulator. But you'll quickly recover that cost in a single summer.

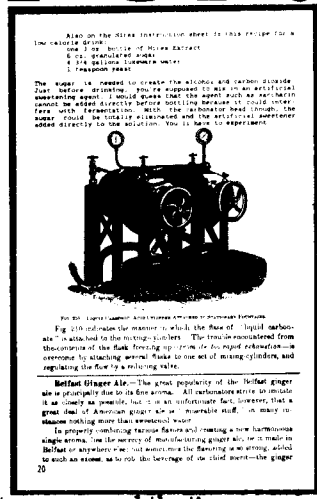
You can make dynamite root beer, carbonate Kool-Aid, Coca-Cola, and other drinks at bargain prices. You can make gallon after gallon of soda water for ice cream sodas or for mixing with your favorite scotch. Experiment!

It's one of the most useful and popular machines (at least with the kids) I've ever built. A single small tank of CO2 last me about a year, and that's an ocean of soda. Each jug is very inexpensive.

I wonder what carbonated milk, tomato juice, or chicken soup would taste like.... on second thought, just stick to soda. Don't just sit there, get going! Built a soda pop machine! 5 1/2 x 8 1/2 booklet 22 page

Cat. no. 88

\$3.00



## BIG SECRETS

by William Poundstone

Revealed! All the "big secrets" that have been "suppressed" over the years!

Poundstone covers everything from the formulation of Coca-Cola to Kentucky Fried Chicken's secret herbs and spices. Learn about the weird stuff on money, "secrets" of credit card numbers, universal products codes, the formulation of perfumes, the way playing cards can be marked, the sealing of envelopes and more. Learn how to beat a lie detector and inkblot tests. Learn the secrets of sawing the woman in half, secret radio frequencies, even the truth about Walt Disney's body being frozen in suspended animation.

Crazy, fun reading! Some of it is no revelation at all, but other sections are fascinating. I enjoyed it, and I think you will too. 6 x 9 paperback 228 pages. Cat. No. 668

\$6.95

The Uncensored Truth About All Sorts of Stuff You Are Never Supposed to Know

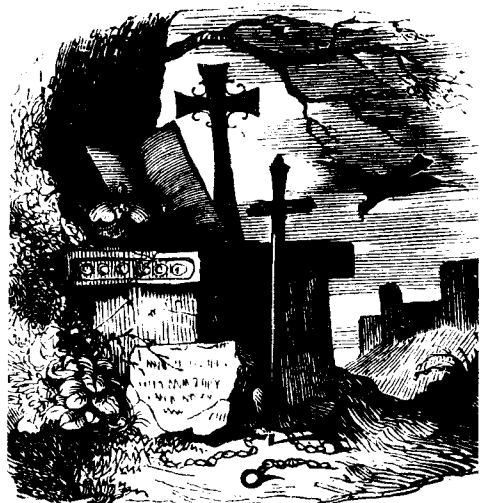
# BIG SECRETS

The formula for Coca-Cola... how playing cards are marked... how to beat a lie detector... what your answers to the Rorschach test really mean... things on American currency you never knew were there... the eleven secret herbs and spices in Kentucky Fried Chicken... credit-card mischief... and more

**WILLIAM POUNDSTONE**



# FAMOUS LAST WORDS & Tombstone Humor



## FAMOUS LAST WORDS

### & Tombstone Humor

by Gyles Brandreth

I really can't improve on the sales pitch that appears on the back cover.

"The last words of Karl Marx: 'Go on get out! Last words are for fools who haven't said enough.'"

The last words of General John Sedgwick (1864): 'They couldn't hit an elephant at this dist....'

Here is a fascinating collection of the dying words and epitaphs of presidents and criminals, heroes and rogues, that offers whimsical and ironic comments on their lives.

Tombstones also give survivors a chance to lighten the gloom:

*Here lies Lester Moore  
Four slugs from a 44  
No Les, no more*

*And in a Less, Massachusetts, cemetery:  
In memory of Mrs. Alpha White  
Weight 309 lbs.*

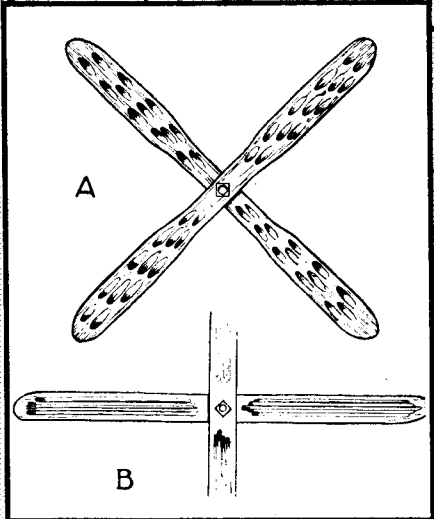
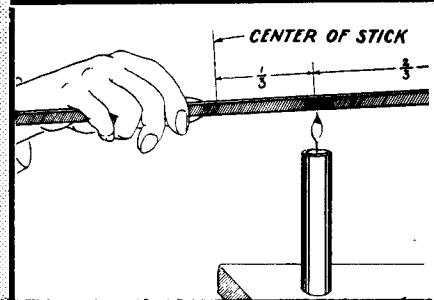
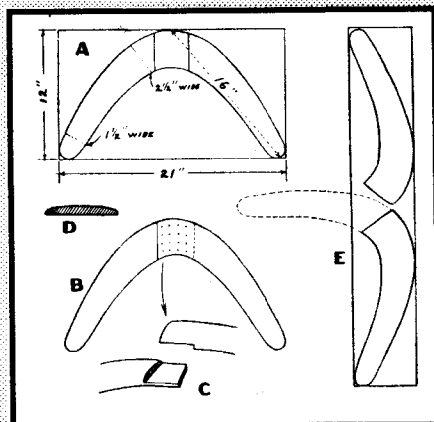
*Open wide, ye heavenly gates*

Inside you'll find hundreds more ways that people have cheated the Grim Reaper — by getting the last laugh."

The famous last words are interesting, but over my head. The tombstone humor in the second half of the book is quite funny. I enjoyed it. So if you've been down to the undertaker to get your measurements taken, you might pick up a copy of this and start thinking about what you want put on your tombstone! Cute book. Consider it.

5 1/2 x 8 1/2 paperback 128 pages  
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# BUILD Boomerangs!



## BOOMERANGS

### How to Make Them and Throw Them

by Bernard S. Simon

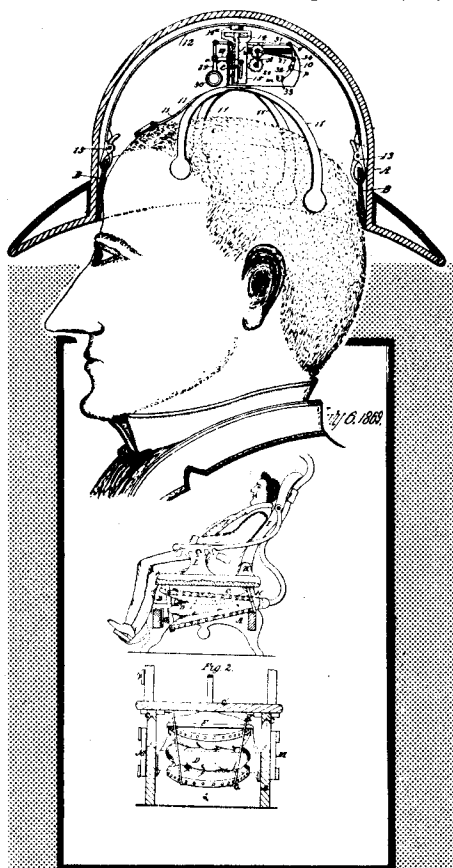
"It only takes minutes to make a good guaranteed-to-return boomerang. By following a few more simple steps you will learn to throw it so it will always return to you..."

Learn how to make all of the standard designs: pin-wheel, boomabirds, airplane shapes, other ornamentals, tumblesticks, and others.

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# MAD Inventions!



## ABSOLUTELY MAD INVENTIONS

by Brown & Jeffcott

"Is the world ready for a tie pin that can be eaten in case of sudden hunger? Or a railroad train that avoids collisions by climbing on top of the opposing train!? Or a privy seat that will throw to the ground anyone who tries to stand on it? Or a man's hat that will automatically tip itself in greeting when the wearer nods slightly?"

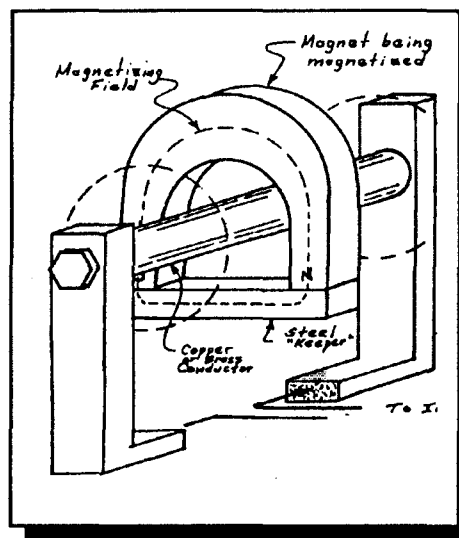
All these — and more — are inventions on which patents have actually been granted by the United States Patent Office..."

You get almost sixty of the wackiest patents ever granted — from an electrical bedbug exterminator and eye goggles for chickens to a safety coffin from which a person could safely exit should he be accidentally buried before he was actually dead!

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# Great MAGNET BOOK!



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by Lester Moskowitz

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Opening this book gives you the feeling you've opened the lab notebook of a famous magnet scientist. It's loaded with drawings, diagrams, equations, notes, hints, tips, circuit diagrams and more.

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You get all kinds of information and making, testing and using magnets from a circuit diagram for a 100 joule impulse magnetizer to suggestions for use in magnetic drives, motors and magnetos, magnetic welding benches and much more.

Expensive! But the best book of its type I've ever seen. Just the right mix of theory and practical application. Rare information. If you think you'll ever need it, get it now. It went out of print once, and is being reprinted (probably only for a short time) by another small publisher. I'm glad to see it's back. 9x12 hardcover 443 pages heavily illustrated Cat. no. 1149 \$65.00

# BREW ALCOHOL FUEL

## How to Make Your Own ALCOHOL FUELS 2nd Edition

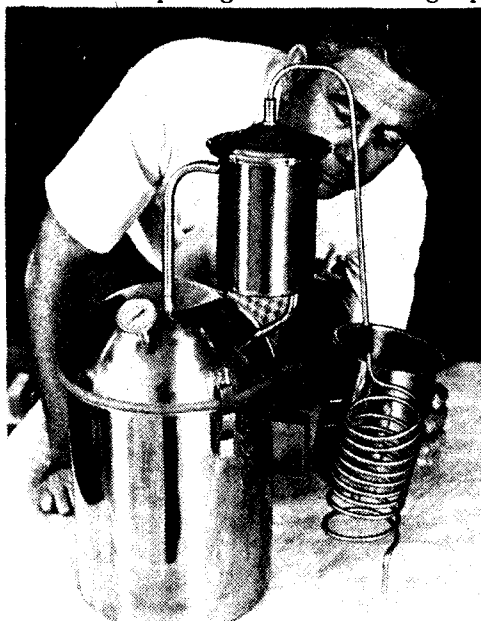
by Larry W Carley

We are once again importing more than half the oil we use. Economists are expecting another "oil shock" although perhaps not as bad that of early 1970's. It might be wise to put a book on your shelf that will show you how to make alcohol fuel from organic material.

Chapters include the truth about alcohol, brewer's basics, feedstocks, making mash, fermentation, distillation, basic stills, planning ahead, a do-it-yourself still, on-farm stills, read-made stills and supplies, rules and regulations, alcohol fuels, and engine conversions.

This book covers a lot of ground and, obviously, it cannot go into great detail on any one subject. Not so many years ago there a number of far better books available on alcohol fuel, but since

people are fickle and lazy, interest in alcohol fuel died when gas pump prices stabilized.



There just wasn't enough demand to keep the books in print. Most people don't worry about the future until the future smacks them in the forehead, and it's too late.

If you're smart, you won't be caught with your pants down. Get a copy of this, read it, study it, know it, and put it on your reference library shelf. When gas is expensive and/or in short supply and everyone is grumbling or getting into fist fights, you can smile and say that you make your own fuel.

Not a great book, but not a bad one either. An excellent overview that will get you started. Be smart. Get a copy. 5 1/2 x 8 1/2 paperback 279 pages Cat. no. 265 \$7.95

## SO YOU'VE GOT A GREAT IDEA

by Steve Fiffer

"Here's how to develop it, sell it, market it, or just cash in on it."

You say you have a great idea? Big deal! So do I. The only idea that is really worth a damn is the idea that is put into action. Your idea may actually be better than mine, but if mine is put to work and yours isn't, then whose is really better?

Marvin Rosenblum, inventor of the Spiro Agnew wristwatch, once said, "At any one time, there may be 50 people talking about the same idea; it's the one who stops talking and starts doing who succeeds."

This book will get you moving. From the back cover:

"...Fiffer shows you how to tell whether your idea is a winner or a klunker and helps you decide how to follow through on it: Should you sell the idea to an established business or go into business for yourself? Do you want to work on the idea full-time or part-time? At home or in an office? You'll also discover the advantages and disadvantages of professional service, whether to apply for a patent, how to use government agencies and find financing.

Here are stories of ordinary people who have had extraordinary ideas that have changed their lives. You will read about:

•Gordon and Carole Segal, who were struck with the idea for Crate and Barrel over their kitchen sink

# SO YOU'VE GOT A GREAT IDEA



•Kip Fuller who created the Servitron Robot because he couldn't afford a caterer at his Christmas party

•Jeffrey Ullman, who combined his talent for making documentaries with a knack for sales and opened one of the first video dating service in America

•Lynn Tatar, whose talent for chocolate novelties transformed her kitchen into the Amazing Chocolate Factory...."

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# Best of American Machinist Magazine

**Best of AMERICAN MACHINIST 1909A**  
reprinted by Lindsay Publications

Jump on this time machine and go back almost eighty years. Explore another age.

Visit early auto factories and watch machinists fabricate engines on ordinary lathes and milling machines. See the jigs and fixtures they use to drill engine blocks, grind cylinders, turn piston rings, and more. See how burner slots are gang milled for the Stanley Steamer fuel burner, and how the 500 psi boiler is wound with piano wire to make it almost explosion-proof. Watch as valve chambers are bored in the Pierce-Arrow engine. And more!

Watch Louis Van Boeckel make fantastic wrought-iron roses in his blacksmith shop. Incredible craftsmanship! Learn how the gasfired crucible furnace is built for heat-treating steel. Learn how acetylene and oxygen can be produced right in the shop for use in oxyacetylene torches. See how magnetic chucks are designed and used.

Read letters from machinists who will show you how to build a special jig for boring lathe headstocks, make improvements on a steady rest, make a scratch gage, a novel babbitt melting furnace, a mold for making babbitt bearings, a hand knurling tool, a riveting machine and more.

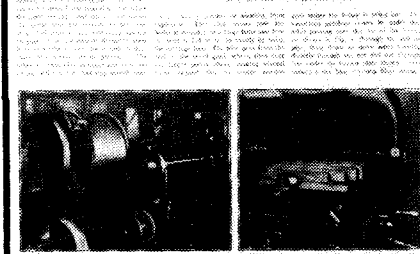
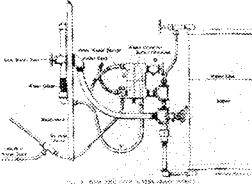
Review extensive test data on the White Steam Car. Discover seven pages of specifications, charts, diagrams, photos and results on one of the most successful steam cars ever built.

Go back even further in history and see giant lathes with seven foot swings and 18' beds, other lathes with stone beds, even muskets and cannons being built centuries

## Building the Stanley Steamer

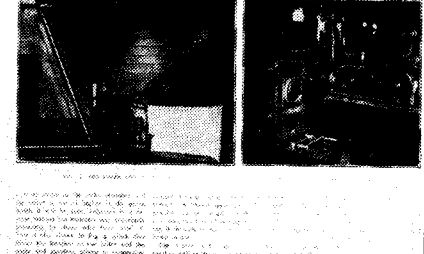
A Water-Cooled Open-End Type in a Boiler-Carrying, 500-PSI-Boiler  
Boiler Housing, Condenser, and Some Other Interesting Details  
EDITORIAL CORRESPONDENCE

This is the first of a series of articles dealing with the construction of the Stanley Steamer, a water-cooled open-end type in a boiler-carrying, 500-PSI-boiler. The first article deals with the boiler housing, condenser, and some other interesting details. The second article will deal with the engine, and the third article will deal with the propeller and shafting.



## Building the Stanley Steamer

The Stanley Steamer is a water-cooled open-end type in a boiler-carrying, 500-PSI-boiler. The first article deals with the boiler housing, condenser, and some other interesting details. The second article will deal with the engine, and the third article will deal with the propeller and shafting.



ago.

Visit a grinding wheel factory. See how grit is prepared and graded, how the wheels are puddled, and how they're fired in an electric furnace. See them being trued up.

See the special jig used to mill the buckets in a steam turbine on an ordinary vertical milling machine. And discover such unusual items as an incredible 1877 machine having a voice box, tongue and other human-like features that could produce intelligible speech. See the vacuum sputtering machine that put a thin gold layer on the

wax master cylinder recordings for Edison's talking machine.

If you build model engines, work iron with a forge and anvil, design and/or use machine tools, or just enjoy researching the past, you should find something here to interest you. You get useful how-to, great ideas from "obsolete" methods, and plain old enjoyable reading.

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# Discover the Magic of Dies!

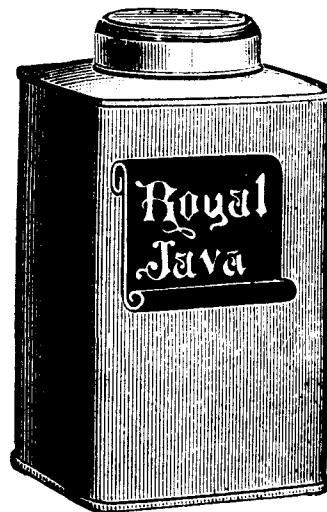
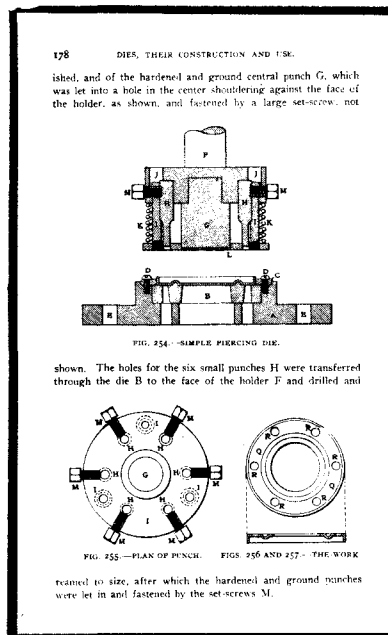
**DIES - Their Construction and Use**  
by Joseph V. Woodworth  
reprinted by Lindsay Publications

Dies are magic! Mount them between the faces of a power press, slip in a piece of sheet metal, and then let the press cycle. Out come simple flat shapes or complex forms like soft drink cans and auto fenders. And it is all done at incredible speed, time after time, each and every piece being identical.

Learn how you can put dies to work in small manufacturing shops. Thirteen chapters will teach you about blanking dies, piercing dies, simple dies for use in the machine shop, gang and follow dies, use of dies for production of sheet metal parts, bending and forming dies and fixtures, perforating dies, dies for curling, wiring and seaming, draw dies, coining processes, methods for feeding stock, hardening and tempering of dies, and more.

You get page after page of drawings and photos showing all kinds of dies for applications from turning a square of sheet metal into a tube in one hit, and punching holes, to the fabrication of those fancy old tins that held tea, tobacco, and crackers decades ago. You'll see a variety of presses - most of them in the smaller sizes.

The beauty of this 1917 volume is that



you'll be taught how to make simple dies in smaller sizes for producing all kinds of things from safety pins to punching fancy leather pieces for shoes. You'll even see a compressed air drop hammer used for making sheet metal caskets!

You can learn right here how to make simpler, low-cost dies in your own shop that produce items you can use yourself or sell

as a sideline. Great information on a mass production tool useful to the small time operator. Very well illustrated. You'll like it. Get a copy. 5 1/2 x 8 1/2 paperback. 400 pages.

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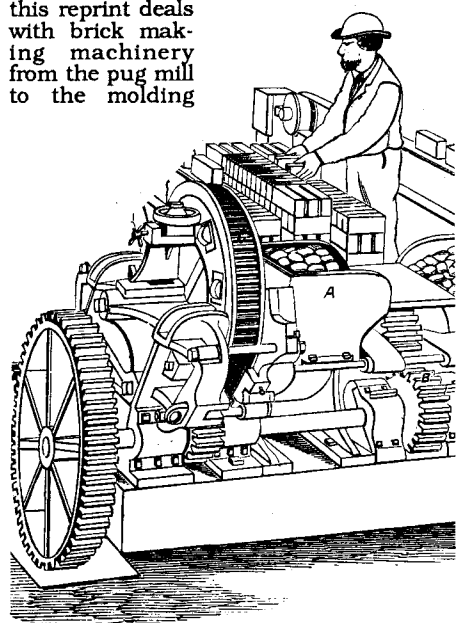
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# Make Bricks & Glass!

**BRICKS & GLASS**  
from Appleton's Cyclopaedia of Applied Mechanics 1879

Think about it. You dig a hole in the ground and scoop up a pile of sticky clay. After you form it into small rectangular shapes, you fire it in a simple kiln with wood, coal or oil, and you have bricks! It's easy!

The first half of this reprint deals with brick making machinery from the pug mill to the molding



machines with excellent illustrations and cutaway drawings of the machines. In 1900 with dozens of brickyards scattered throughout Illinois, it wasn't very hard to see these machines in action. But where can you find them today?

The second half of this reprint deals with the tools and techniques used in the manufacture of glassware. You'll see some of the simple tools used by glass blowers. And you'll see, what is now, a primitive bottle mold. Another illustration shows a polishing machine for smoothing glass sheets for the production of mirrors. Silvering of mirrors is covered, but the process described is the old one using mercury amalgam and is very poisonous to the careless worker. Still, you get all the details.

What is interesting about all this is that this technology is gone. It's from another age, and it's difficult to even find pictures of brick-making machinery, or formulas for silvering mirrors. This information is quite rare. Rare or not, it's fascinating to anyone interested in old technology. . . or to someone who's going to make his own bricks. Get a copy. 8 1/2 x 11 booklet 23 pages illustrated

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## CRYSTALS AND CRYSTAL GROWING

by Holden & Morrison

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# LOCKS!

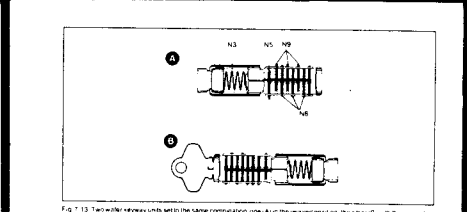
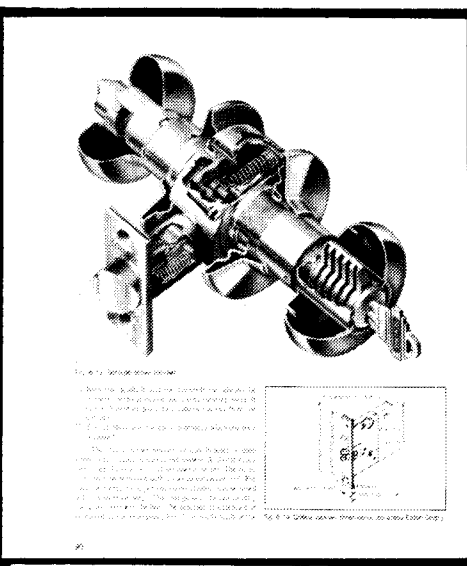


Fig. 7-13 The water keyway unit with the same composition line A as the water keyway. The plug is in the proper position.

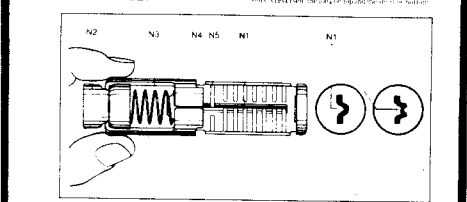


Fig. 7-14 A water keyway unit with the same composition line A as the water keyway.

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by C. A. Roper

You can become a proficient locksmith with some effort, the right tools, and this book.

You get top rate illustrations in chapters covering tools, types of locks and keys, master keying, keyed padlocks, home and business services, decoding locks, lock picking, business and law of locksmithing and more. Individual chapters cover these locks: ward, lever, disc-tumbler, Schlage Wafer Tumbler, Pin-Tumbler, double bitted, vending machine, auxiliary door locks, office locks, auto locks, combination locks and more.

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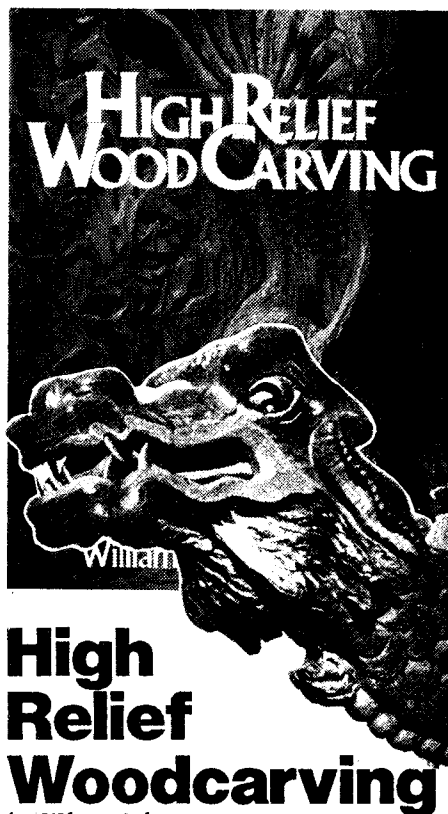
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# INDEX

air, compressed .....	55
airplanes .....	52,87
alcohol fuel .....	91
alternators & generators .....	8,73
autos .....	35,39,70,92
babbitt .....	32,39,49,92
blacksmithing .....	71-73
boilers .....	52
boomerangs .....	90
booze .....	89
boring .....	16
boy mechanic .....	45
brake, sheet metal .....	23
brass .....	39,64, 65
bricks .....	93
calculus .....	85
cannons .....	35
charcoal .....	32,58
charcoal foundry .....	21
chemistry .....	7,68-69
chucks .....	36
CO2 .....	36
coke .....	32,58
cologne .....	47
copperworking .....	7,62
Corliss engines .....	51
crucible furnace .....	23
crucibles .....	36
crystals .....	93
cupola .....	32,58
dies .....	92
dividing .....	32
drill press .....	25
drillers' handbook .....	59
dynamometers .....	33
electrical books .....	49
electrical projects .....	8,9
electroplating .....	34,67-69
enamelling .....	62
engine repair .....	56
engineers' handbook .....	28
engines .....	13, 14
engines, hot air .....	33,36
engines, one-lung .....	54,55
engines, steam .....	32,33,37,53
explosives .....	32
fans, centrifugal .....	22
filing .....	15,32
flame cutting .....	77
flatus handbook .....	88
forge supplies .....	58
forging .....	3,70-72,75
foundry .....	2,12,13,20-23,32,58-65,68
fuel .....	73,91
furnace, electric .....	20,34
galvanizing .....	32
glass .....	14,32,93
glass, stained .....	30
glue .....	34
grinding .....	16
hints & tips .....	40,46,47
history .....	7,38-44,48,57,87,92
homesteading .....	11
humorous tombstones .....	90
hydraulics .....	15
hydrogen fuel .....	73
idea promotion .....	91
indexing .....	86
indicators for the lathe .....	32
induction heating .....	63
inventions .....	41,90
jewelry .....	12
lathe accessories .....	27
lathe design .....	86
lathe practice .....	77
lathe tools .....	70
lathe, build a .....	24,80
lathe, run a .....	29,31,48
liquid air .....	51
locks .....	93
lubricants .....	34
machine design .....	31
machine shop practice .....	4, 5, 6
machine tool restoration .....	76
magnets .....	32,91
matches .....	34
mathematics .....	29,85
mechanisms .....	83, 86
metal disintegrator .....	78
metallurgy .....	33
micrometer .....	32
milling machine .....	26,80
mining .....	57
mirrors .....	24,34
model engines .....	14
model making .....	57
model ships .....	12
moonshine .....	89
motor repair .....	10
musical instruments .....	12
optics .....	84
ordnance .....	35
organization .....	42
papermaking .....	32
patternmaking .....	61
perpetual motion .....	41,82
pewter .....	22
phonographs .....	28,32
physics .....	84,87
planer tools .....	70
planing .....	79
precious metal recovery .....	60
printing with silk screen .....	83
projects .....	8,13,16,17,37,40,45,79
projects, advance metal .....	78
prospecting .....	60
refrigeration .....	32
rubber .....	64
sand molding .....	59,64
saw plans .....	81
sawmill .....	33,54
science .....	87
science experiments .....	16, 17, 18, 19,53
science fairs .....	18
scraping by hand .....	32,77
secrets .....	89
secrets, medieval .....	60
shaper, build a .....	25
shaping .....	79
silkscreen .....	83
silver smithing .....	66
smelting iron ore .....	32
soap .....	47
soda pop .....	89
spinning metal .....	5
steam power .....	32,39,48-52,92
stills .....	89, 91
survival .....	74
Tesla coil .....	34
thermit welding .....	11
three phase motors .....	11
tool & die .....	3,38,44
trivia .....	66
turning .....	16
violin, build a .....	37
vise work .....	15
welder, build a .....	84
windpower .....	88
woodcarving .....	94
work for a jerk .....	76
wright brothers .....	87



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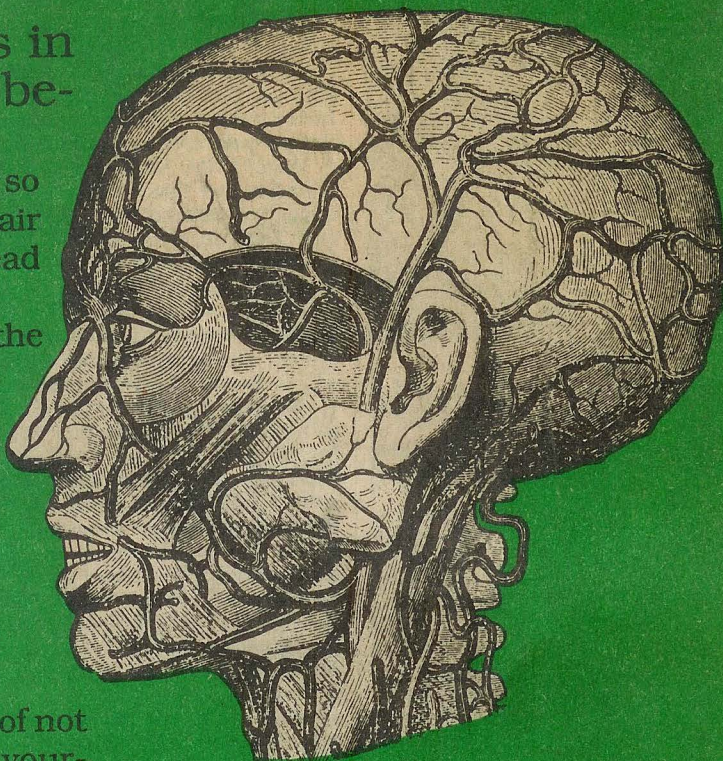
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62

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